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STUDIES IN THE ANTHROPOLOGY OF OCEANIA AND ASIA

ROLAND BURRAGE DIXON

PAPERS
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STUDIES IN THE ANTHROPOLOGY OF OCEANIA AND ASIA

PRESENTED IN MEMORY OF
ROLAND BURRAGE DIXON

BY

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FOREWORD

THE present volume is offered in homage to the memory of Dr. Dixon by a group of his former students who under his guidance developed special interests in the fields of Asiatic and Oceanic anthropology. The articles include the subjects of physical anthropology, archaeology, and ethnography, and cover a territory reaching from Easter Island to western Siberia and Arabia.

Carleton S. Coon
James M. Andrews, IV
Editors

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CONTENTS

FOREWORD v

ROLAND BURRAGE DIXON, *A Tribute* ix

BIBLIOGRAPHY OF ROLAND B. DIXON xii

I. Harry L. Shapiro, *American Museum of Natural History*
Physical Differentiation in Polynesia 3

II. Kenneth P. Emory, *Bishop Museum, Honolulu*
Polynesian Stone Remains . . 9

III. Edward S. Craighill Handy, *Formerly of the Bishop Museum*
Two Unique Petroglyphs in the Marquesas which Point to Easter Island and Malaysia 22

IV. Gordon MacGregor, *United States Department of the Interior*
The Gods of Rennell Island . . 32

V. W. W. Howells, *University of Wisconsin*
The Racial Elements of Melanesia 38

VI. Douglas L. Oliver, *Peabody Museum, Harvard University*
The Horomorun Concepts of Southern Bougainville: A Study in Comparative Religion . . 50

VII. R. Lauriston Sharp, *Cornell University*
Notes on Northeast Australian Totemism 66

VIII. Ralph Linton, *Columbia University*
Culture Sequences in Madagascar 72

IX. Gordon T. Bowles, *University of Hawaii*
Linguistic and Racial Aspects of the Munda Problem . . . 81

X. James M. Andrews, IV, *Peabody Museum, Harvard University*
Evolutionary Trends in Body Build 102

XI. Frederick S. Hulse, *Formerly of the University of Washington*
Physical Types Among the Japanese 122

XII. Li Chi, *Tsinghua University, Kunming, China*
The Prone Burials of Anyang . 134

XIII. James H. Gaul, *Brooklyn College*
Observations on the Bronze Age in the Yenisei Valley, Siberia . 149

XIV. Carleton S. Coon, *Harvard University*
Southern Arabia, a Problem for the Future 187

LIST OF ILLUSTRATIONS

MAPS

1. Islands of the Pacific 23
2. Hiva Oa, Marquesas 24
3. Melanesia 39
4. Northeast Australia, tribes and totemic organization 67
5. Munda, Khasi, and Himalayan linguistic areas 85
6. Thailand, anthropometric survey . . 103
7. Japanese Archipelago, area studied . . 123
8. Southwest Siberia, principal Siberian sites 155
9. Sites near Bateni, Yenisei Valley . . 157
10. Southern Arabia 188

FIGURES IN TEXT

1. Figures from Easter Island . . . 25
2. Growth changes, differences between means in Thailand and comparative series 112
3. Stratification of the North Wall, Burial 18.4 137
4. The *Ko*, or ceremonial bronze dagger . 138
5. Siberian grave sections 151
6. Afanasiev grave artifacts 154
7. Afanasiev pottery 156

PLATES

I. *Frontispiece*, ROLAND BURRAGE DIXON
II. Tahitian maraes (3 figs.) . . . 12
III. 1, Marae from Necker Island; 2, A Gilbert Island shrine; 3, Marae Rangihoa at Napuka 14
IV. 1, Mangarevan marae; 2, Easter Island image *ahu;* 3, council platform at Maeva village, Huahine . 16
V. 1, Ancient Hawaiian shrine; 2, New Zealand sacred place; 3, *Malae* at Fakaofu, Tokelau Islands; 4, dancing platform, Yap, Caroline Islands . . Facing page 16
VI. 1, Chief's tomb, Yap; 2, sacred house, Yap; 3, Tongan *langi* at Mua, Tongatabu . . Facing page 19
VII. 1, The Tahauku petroglyphs; 2, 3, 4, the Hanaiapa petroglyphs . . . . Facing page 27
VIII. Rennell Island, Harvest Ceremony. 1, the drummer begins the dance; 2, the marae prepared for the Harvest Ceremony; 3, the Harvest Ceremony dance in full swing . . . . Facing page 36
IX. Rennell Island, Harvest Ceremony. 1, the closing dance of the annual Harvest Ceremony, Bellona Island; 2, offering of harvest fruits to the gods . . . . . . Facing page 37
X. Siuai club-house with food display platform (*raoku*) in foreground . . . . Facing page 52
XI. Participants at a social-climbing feast waiting for food to be distributed . . . . . Facing page 52
XII. Khasi, Bhotia, and Munda types . . . . Facing page 86
XIII. Manchati and Kanawri types . . . . Facing page 87
XIV. Evolution of the *Chüeh* . . . 143
XV. Andronovo pottery . Facing page 155
XVI. Andronovo pottery 159
XVII. Kara Suk metal objects . . . 163
XVIII. Kara Suk pottery 167
XIX. Characteristic objects of Teplouhov's prehistoric sequence . . 172
XX. Characteristic objects of Teplouhov's sequence in A.D. times . . 180

ROLAND BURRAGE DIXON

ROLAND BURRAGE DIXON, the son of Louis Seaver Dixon and Ellen R. Burrage, was born in Worcester, Massachusetts, on November 6, 1875, and died at his home in Harvard, Massachusetts, on December 19, 1934. Having prepared at Hopkinson's School, he entered Harvard and was graduated with the class of 1897. Following his graduation he was appointed Assistant in Anthropology at the Peabody Museum, and during the ensuing summer he pursued archaeological field work in Ohio. After having received the Master's degree in 1898, he became a member of the famous Jesup North Pacific Expedition of the American Museum, which included figures such as Boas, Jochelson, and Bogoras, and did ethnological work among Indians of Alaska and British Columbia. It was in 1899 that, under the auspices of the American Museum of Natural History, he spent the first of six seasons among the Indians of California. He soon became the acknowledged authority upon the ethnology and linguistics of this region; he received the Doctor's degree from Harvard in 1900 with a thesis on the language of the Maidu Indians of California.

His work in California was interrupted, however, by a year abroad; after the receipt of his doctorate, he spent a winter in research in Germany, followed by a trip through northern Mongolia and Siberia. Upon his return in 1901 he became an Instructor in Anthropology, and the next year was made a member of the faculty. He was an Assistant Professor of Anthropology from 1906 to 1915, and in 1915 was elevated to the rank of Professor. As early as 1904, however, he became the Librarian of the Peabody Museum, in 1908 Secretary of its Faculty, and in 1912 Curator of Ethnology. All of these offices he held at the time of his death.

As a librarian Dr. Dixon built up the library of the Museum from a small collection of 3,138 volumes and 2,908 pamphlets in 1904 to one of the leading anthropological libraries of the world, containing at his death in 1934, 17,075 volumes and 10,788 pamphlets. His choice of books was so excellent that even though he had very limited funds at his disposal, the library contains all the principal works of leading anthropologists. He brought together by means of exchange of the Memoirs and Papers of the Peabody Museum virtually all the anthropological publications of institutions and museums of the world.

As a bibliographer he realized the importance of the anthropological articles appearing in the various serials and feared that these articles would be lost, since no current index in the field of anthropology existed. For this reason he instituted his own system of classification, having each article in the serials indexed by author, by subject, and by geographical location, thus, making available a bibliography under each subject so that a student may find, for example, under "musical instruments" all leading books or articles on that topic. This system of analyzing all serials has made the catalogue of the Peabody Museum Library the best bibliographical tool in the world for anthropologists. It is one to which former students continually return for study.

Dixon's travels in pursuit of ethnological data led him at different times to Mexico, including Yucatan, New Zealand, Australia, Tasmania, Fiji, and the Philippines. He also spent a year in Asia during which he visited the Western Himalayas, Assam, and Upper Burma, the Malay Peninsula, Java, China, and Japan. During this trip he penetrated the difficult Hunza region of northwestern India, where he succeeded in measuring a sample of the Burushaski mountaineers.

In spite of these extensive travels abroad and his seasons in California, Dixon was only secondarily interested in field research; his primary interest was as complete a knowledge of ethnological facts as it might be possible for one man to acquire. Filled with a love for exactness, and urged on by a firm belief in the necessity of the most exhaustive study of source material, he learned Russian and Scandinavian languages in addition to the more usual French, German and Italian. Almost literally he knew everything that had been written on the primitive peoples of Asia, Oceania, and the two Americas. He was undoubtedly one of the most erudite ethnographers of all time.

The great mass of anthropological knowledge which he had thus acquired he gave freely to his students. It was his habit to come to Cambridge three days a week, spending the rest of the week in uninterrupted study at home. On the days he was in Cambridge, he was at the service of his students from early morning until late afternoon; every moment which was not taken up by lecture hours was devoted to conferences, which often included the luncheon period. In the corridors, on the front steps, on the sidewalk he was constantly approached by other students with questions to ask; Dixon would pause a moment for each, remove his pipe from his mouth, rub his forefinger along the side of his nose, and within a minute the answer would be forthcoming.

His greatest success in teaching was with those graduate students who worked directly under him. He inspired scholarship and discouraged the tendency to jump at conclusions. In his judgments of the scientific work of his students, of his colleagues, and of himself, Dixon exhibited an almost inhuman objectivity. His attitude was one of unsympathetic impartiality, of ruthless condemnation, or of detached approval. These judgments, because of their impersonal and principally intellectual character, possessed unusual validity.

His first course in Harvard College, given in 1898–99, was on the subject of primitive religions. His most noted courses, however, were his so-called area courses in which he covered exhaustively the ethnography of North and South America, of Asia, and of the entire Oceanic area, including Australia. Students came out of his lectures shaking their cramped fingers; they took more notes per hour under Dixon than under almost any other lecturer in Harvard College. These area courses were so carefully standardized in organization that the students knew in advance what would be the order of procedure in each group or area studied, and this allowed them to anticipate headings and made the manual fatigue more bearable.

Besides the area surveys Dixon gave two courses in which his knowledge was organized topically: *Primitive Arts and Industries*, and *Culture and Environment.* In the first he surveyed the entire material culture of living peoples with utmost system and penetration; in the second he recounted and criticized the works of others on the subjects of environmental influence on human cultures, diffusion, and independent invention, adding constructive comments and theories of his own. It was this latter course which gave rise to his third book, *The Building of Cultures.* Throughout these courses Dixon's major interest in problems of material culture, of mythology, and of primitive religion, were manifest to his students; he was weakest in the subjects of social organization, and of events in the individual life cycle such as birth, adolescence, and marriage. This lack of emphasis on these subjects may in part have reflected his own personal asceticism and bachelorhood.

Aside from his numerous shorter works, including those on the subject of the Indians of California, Dixon's life was marked by the publication of three books: *Oceanic Mythology*, *The Racial History of Mankind*, and the *Building of Cultures.* The first of these, which appeared in 1916 as volume 9 of the series *Mythology of All Races*, was the first orderly survey of any aspect of Polynesian history and culture to be printed. In his analysis and conclusions he went beyond the subject of mythology proper and presented an hypothesis of the origins of the Polynesians and the sequence of their migrations to the Pacific. This book has had greater influence on the subsequent study of Polynesian ethnology than any other work.

In his second book, *The Racial History of Mankind* (1923), Dixon applied his techniques of thorough documentation, order, and method to a field in which he was less competently versed, namely, physical anthropology. Against the advice of his colleague, Professor Hooton, he abstracted all available published material on the craniology of contemporary peoples and fitted each skull into a framework of categories based on the interrelationships of three criteria: the cranial index, the length-height index of the skull, and the nasal index. His assumption was that all basic races were either long or round headed, high or low vaulted, and narrow or broad nosed. Thus, all human crania could be divided into eight classes, and all that fell into intermediate categories were divided between the extremes.

Although this arbitrary procedure met with extensive criticism, and although no living physical anthropologist of repute would follow it today, his study of the craniology of all parts of the world on this basis served to upset a number of misconceptions as to racial relationships and pointed the way to other studies pursued by more tenable techniques. Dixon was the first, for example, to indicate by means of scientific data the composite racial character of the American Indians, a conclusion which has been substantiated by more recent work in archaeology as well as in physical anthropology. To his death Dixon referred to *The Racial History of Mankind* as "my crime," but few of us thought that he regretted having committed it.

His third effort, *The Building of Cultures* (1928), may properly be labeled his maximum opus. In it he revealed his philosophy of anthropology, the synthesis and culmination of his thinking upon the immense mass of knowledge which he had acquired. Three related subjects occupied his chief attention: environmental influence, diffusion, and independent invention. He carefully reviewed the writings of exponents of all schools concerned, weighed their theories, and offered a rational explanation of his own to explain the development and expansion of human civilization. Here his critical faculties were exercised at their most felicitous level, and his own contribution was erudite, rational, and constructive.

At the time of his death the second subject, diffusion, occupied most of his attention; he was engaged in an exhaustive study of the possibility of the transmission of food plants across the Pacific from South America to Oceania and had already arrived at the conclusion that some such contact must have occurred. It is characteristic of him that he was about to reverse his role as the foremost exponent of the Monroe Doctrine in American Anthropology at the time when his labors ceased. Truth and accuracy were his major deities, and in their service he had as complete a disregard for the appearance of personal consistency as for the possibility of ridicule. In this, in his rigid maintenance of the scholarly ideal, his true consistency lay.

At the time of the Armistice in 1918, Dixon contributed his services to his government. He became a member of the Colonel House Commission, called the "Inquiry," and collected reports on political conditions in Central Asia. In December of the next year he sailed for France with the American Commission to Negotiate Peace, and remained in Paris until May, 1920. In 1929 he was called to Oregon to give expert testimony as to the racial character of the Armenians in a test case concerning their putative exclusion from this country as Asiatics. Dixon's evidence that the Armenians belonged to the White family of races earned him the widespread thanks of that people and was largely instrumental in their admission to the United States at the time of their sorest difficulties in their homeland.

Apart from his academic duties and interests, Dixon was essentially an out-of-doors man. With pack trains he spent several summers in the inaccessible parts of the Olympics, the Cascades, and the Sierras of the Pacific coast, and he knew every camping site in the White Mountains. In traveling and camping in wild regions with the few friends whom he admitted to this intimacy, he was the most delightful companion imaginable. He was painstakingly skillful in the technique of wilderness living. His dislike for the restrictions of urban life caused him, in 1915, to build a house at Harvard, Massachusetts, where, surrounded by his own woods and gardens and with a wide frontage on an unexploited lake, he lived in the company of his trusted servants and of his dogs, a life of isolation and of contentment.

Dixon was a man of great reserve and of few intimacies. His chauffeur knew him better than did his colleagues and students. He shrank from personal contacts except upon superficial and conventional bases. Very few persons were admitted to the secret of his personality, although he showed himself, at times, a delightful host and a charming companion. It required continuous and close association with him to break through the surface of his polite and protective geniality. Moreover, the rare fissures which now and then appeared through his coating of reserve closed almost instantaneously. He adhered with great tenacity to a plan of life and a scheme of scientific research which he had laid out in his youth. Undeterred by opposition, unbending and rigid in his ideas, he steadfastly maintained his aims and ideals of a scholastic life. His intimate knowledge of ethnography and the rarity and breadth of his interests made him a unique and outstanding figure in American anthropology.

ALFRED M. TOZZER*
CARLETON S. COON

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* Parts of the above were originally written by Alfred M. Tozzer, as Chairman of a Committee of the Faculty of Arts and Sciences on the "Life and Services of Roland B. Dixon" and published in the *Harvard University Gazette*, vol. XXX, no. 23, Saturday, February 23, 1935. This material was also used in a joint paper by Alfred M. Tozzer and A. L. Kroeber in the *American Anthropologist* (n.s.) vol. 38, no. 2. In its present form the article has been rewritten and amplified by C. S. Coon.

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STUDIES IN THE ANTHROPOLOGY OF OCEANIA AND ASIA

I

PHYSICAL DIFFERENTIATION IN POLYNESIA

Harry L. Shapiro

THE belief that the Polynesians are not only a composite population racially but a heterogeneous one geographically has grown widespread and firmly established. Although these concepts are not necessarily corollary, they have tended to become so and to acquire the status of an equation in an anthropological cliché. If space permitted, it would be instructive to trace the genesis of the one and its influence upon the other. But whatever the origin of this conjunction may be, it is necessary to bear in mind that both the racial composition and the local differentiation of the Polynesians remain problems which have not yet received their final solution. But it is precisely because the question of geographic differentiation has great significance for the disentanglement of the Polynesian racial complex that I have chosen to consider it here divorced from considerations of type analysis.

On the subject of the uniformity of the Polynesian population there has been a rather remarkable reversal of opinion since its discovery by Europeans. The impression that the natives created in the minds of their 18th century visitors was one of unity, in spite of enormous geographic distribution. The contemporary view was well expressed by Forster, who was one of the first men with a scientific bent to write about them. "We chiefly observed," he remarked, "two great varieties of people in the South Seas: the one more fair, well limbed, athletic, of a fine size, and a kind benevolent temper; the other blacker, the hair just beginning to become woolly and crisp, the body slender and low, and their temper, if possible, more brisk though somewhat mistrustful. The first race inhabits O-Taheitee, and the Society Isles, the Marquesas, the Friendly Isles, Easter Island, and New Zealand. The second race peoples New Caledonia, Tanna and the New Hebrides, especially Mallicollo."

It would be false, however, to suggest that slight deviations in stature and pigmentation were not observed or recognized even at this date. On the contrary, the early explorers frequently compared one group of islanders with another, distinguishing them not only by their lighter or darker skin, their taller or shorter stature, but by various cultural and psychological differences as well. But in the absence of precise, detailed data the impression of a homogeneous Polynesian population prevailed over the evidences of diversity. Perhaps it was simply contrast with their Melanesian neighbors that lent the Polynesians this appearance of uniformity.

The prevailing view at present, on the contrary, depicts the Polynesian as a hybrid and diversified population. This concept has been encouraged both by the increasing emphasis on cultural diversity with its explanatory diffusions and migrations as well as by the results of analytic studies of specific groups. In fact, the emphasis on physical diversity has grown in direct ratio to the refinement of anthropometric activity and the elaboration of statistical analyses. Dissenting opinion, however, has not been altogether silent. Keane, as late as 1910, continued to defend the "remarkable uniformity" of the physical as well as cultural characteristics of the Polynesians, repeating a similar conviction expressed by Deniker ten years earlier. But the views of Sullivan and Dixon on this point more accurately reflect the dominant opinion. Sullivan summarized his results as follows: " . . . the population of Polynesia is composed of at least 4 different and distinct elements. . . . These types combine in various proportions to make up the populations of the different island groups. Different islands in the same groups contain these elements in different proportions." And Dixon characterized the Polynesians as "culturally and physically . . . far from uniform."

In retrospect, it is apparent that this belief in the diversification of the Polynesian population arose from the results of type analysis. The discovery of diverse elements within a group and the variations in their proportions from group to group led to a wide variety of hypotheses. The Polynesians were pictured as having acquired their heterogeneous character as a result of a succession of migrations each differing in physical type and mixing in varying proportions after reaching the present area. Sullivan, for example, has analyzed specific samples of Polynesians for the presence of identifiably distinct "types." He has affirmed the existence of an "Indonesian" and a "Polynesian" strain as well as the possibility of still others. Although he refrained from associating type with migration, he does maintain that each migration introduced a special type, thus producing geographic differentiation. Dixon established fixed combinations of indicial traits as representative of various racial entities and then calculated the percentages in which these combinations occurred in each of the island populations. From the distribution thus derived he postulated an hypothetical series of migrations of divergent stocks—proto-Negroid, proto-Australoid, Caspian, palae-Alpine—to account for the distribution of types he found. Among the pioneers in this method is Volz who required four separate migrations to Easter Island in order to bring there the representatives of Polynesia, Australia, eastern and western Melanesia, which he claimed to discover statistically in a rather small series of Easter Island crania. Without citing other examples enough has been said to indicate the orientation of these investigations. The genetic premises upon which these studies have been based do not, unfortunately, bear close examination.

The extremely complex forms of recombination and the subtle degrees of blending which quantitative physical traits undergo in miscegenation render this form of analysis by associations a hazardous procedure. In fact, it is extremely dubious that our present knowledge of genetics is capable of providing the answers sought in this fashion. Not until we know the precise behavior of physical traits subjected to race mixture can we seriously hope to figure out statistically the racial components of a complex population.

Contrary to the principles underlying type analysis, the study of trait patterns by geographic distribution rests upon a technique of broad comparison of group with group and on the belief that differences in genetic composition are reflected in the average values of the populations under scrutiny. Such a procedure makes no demands upon genetic credulity, nor does it strain the limits of known laws. As a methodology useful for this area it has until recently been somewhat neglected, mainly because the necessary data were not in existence. Fortunately, within the past two decades, adequate material on the living has been accumulated through the efforts of the Bishop Museum. The cranial data, however, still remain unsatisfactory for a regional survey, although recently a number of valuable contributions have filled in certain gaps. It is my aim in the ensuing discussion to examine the geographic variations of the anthropometric data of the entire Polynesian area as it is now known, in order to approach the problems of heterogeneity and migration from a fresh angle.

The fundamental assumption in comparing the mean values of one series with another rests on the theory that the average of a statistically adequate and random sample falls within definable limits of the absolute mean of the particular universe of which it is a part. Where it does not, the sample is taken to represent a departure from the universe with which it is compared. Such discrepancies may arise from a number of causes, but other things being equal, they may most reasonably be attributed to differences in genetic composition. Statistical devices have been invented by which the purely statistical vagaries of the sample may be assessed and for which allowance may be made. But, unfortunately, samplings and measurements are subject to still other variables less amenable to subsequent correction. Most significant of these are personal equation and variations in such factors as age. The dimensions commonly employed in anthropometry are not all equally definable. Some, such as cephalic length and breadth, are relatively easy to standardize, while others (such as face and nose height) are extremely difficult. These latter measurements have as their upper terminus the nasion, a landmark frequently elusive to palpation. As a result, wide discrepancies are known to occur between the measurements of different investigators. As an illustration of this, I append the following comparisons in which independent samples by different observers are set side by side.

TABLE I

	Face Height	Nose Height
Samoa I	131.1 mm.	59.8 mm.
Samoa II	124.95 "	56.6 "
Samoa III	123.7 "	53.6 "
Tonga I	128.2 mm.	57.5 mm.
Tonga II	122.3 "	52.9 "

The maximum deviations shown here for a single archipelagic population approach the maximum range for the entire Polynesian area. That these discrepancies represent differences principally in technique is confirmed by the close resemblance between the various series in those measurements with termini more readily determinable. Although the above examples are extremes, they indicate the kind of artificial distortion that may occur. Obviously, correction is possible only in the presence of check samples which unfortunately are not available for all the groups.

Similar but less flagrant variations partly due to personal equation seem apparent in the bizygomatic and bigonial diameters. The repercussions of these mechanical errors may of course be anticipated in the resultant indices in which these dimensions play a part.

Selection, also, may seriously influence the mean. In Samoa, for example, it is possible to observe a marked change in such measurements as the bizygomatic diameter with age. Although the data are insufficient to demonstrate equivalent age changes in all other island populations, there is every reason to believe that similar ones do occur. Unfortunately, in many of the samples the numbers are so small that the age distributions are often irregular and difficult to correct. To what extent such factors control the observed values is at present beyond calculation.

In this roster, by no means complete, of imponderable factors influencing the mean, one other frequently overlooked deserves more than passing mention. In comparing the mean deviations of one trait against those of another there is no satisfactory method of determining to what extent the difference in range reflects a difference in heterogeneity. It is known, to be sure, that the size of the dimension itself determines to some extent the range of the mean values. A population, for example, equally variable in stature and nose width, would be expected to yield a distribution of sampling means considerably wider in range for stature than for nose width. And indeed, it is customary in some instances to correct for the size factor before comparing the variability of different traits. But beyond this, it seems to me that there may well be differences independent of size in innate structural variability, which cannot be measured by available scales.

I have listed these exigencies in order to emphasize the less apparent difficulties in estimating heterogeneity by the variations in the means of diverse groups. The fluctuations from the true mean attendant upon inadequacy of numbers are too well known to require explanation. And even though statistical checks may be calculated they serve not to limit but to increase the possibilities of range. Despite this gloomy outlook on the reliability of our tools and our data, some conclusions of value may, I believe, be drawn from the evidence. The confession, however, must be made that the slavish adherence to statistical method needs tempering by experience and judgment. As many errors have been perpetuated in physical anthropology by statistical commission as by statistical omission.

There are at present available for survey twenty-six separate Polynesian samples of living populations, embracing the following islands or archipelagoes: Samoa, Tonga, Niue, various Cook Islands, the Society Islands, the Australs, the Hawaiian Islands, New Zealand, the Marquesas, various Tuamotuan atolls, Mangareva, and Easter Island. The traits for which we have comparable data from all these groups include stature, head length, head width, minimum frontal diameter, bizygomatic diameter, bigonial diameter, face height, nose height, and nose width. The following proportions are also available: cephalic index, fronto-parietal, cephalo-facial, zygo-frontal, zygo-gonial, facial, and nasal. Disregarding, for the moment, qualifications of the observed means, I have listed in the following table the absolute range of the various means.

Table II

RANGE OF 26 POLYNESIAN GROUPS—MALES

	Minimum	Maximum	Difference
Stature	167.53 cm.	174.68 cm.	7.15 cm.
Head Length	186.40 mm.	199.09 mm.	12.69 mm.
Head Width	147.00 “	160.90 “	13.90 “
Minimum Frontal	98.52 “	107.90 “	9.38 “
Bizygomatic	141.32 “	148.4 “	7.08 “
Bigonial	104.6 “	118.3 “	13.70 “
Face Height	121.5 “	131.1 “	9.60 “
Nose Height	52.8 “	61.6 “	8.80 “
Nose Width	40.1 “	45.5 “	5.40 “
Cephalic Index	74.27	86.48	12.21
Fronto-Parietal Index	64.25	69.52	5.27
Cephalo-Facial Index	91.27	99.06	7.79
Zygo-Frontal Index	67.43	74.37	6.94
Zygo-Gonial Index	71.70	80.51	8.81
Facial Index	82.64	89.90	7.26
Nasal Index	69.86	82.72	12.86

These ranges alone are, for the reasons given above, not completely reliable criteria of differentiation. As they stand, however, they suggest two opposing tendencies: a moderate degree of variation and differentiation combined with evidences of homogeneity. The relatively wide fluctuations in the means of the cephalic dimensions, bigonial diameter, face and nose heights, cephalic index, nasal index and zygo-gonial index exceed the limits expected from homogeneous samples. On the contrary, the more restricted deviations in stature, bizygomatic diameter, fronto-parietal index and zygo-frontal index reflect a uniformity greater than might be anticipated for a people dispersed over so great an area and subject to the diverse influences operating upon an insular population.

If the more variable traits are examined by geographic distribution, it is possible to discern a well defined pattern only in the head length, head width, and cephalic index. The Society Islands in Central Polynesia stand out as an area of marked brachycephaly, a characteristic which is shared by Hawaii in the north and by the neighboring islands of the northwestern Tuamotus, the Australs, and by some of the Cook Islands. Beyond this region of relative broad-headedness, central in position except for its northward extension to Hawaii, lies an encircling fringe of islands—Samoa, Tonga, the Marquesas, Mangaia, Manihiki, Rakahanga, and the Central Tuamotus—in which the cephalic index drops to levels ranging from 79 to 81. In the islands still further removed from the Society group—the southeastern Tuamotus, Mangareva, and New Zealand—the cephalic index sinks below the upper limit of dolichocephaly. And finally, in the most remote eastern outposts of Polynesia, in Napuka, and Easter Island, the index reaches the lowest level for the entire area—74.27 and 74.61, respectively. Thus, the cephalic index becomes increasingly lower as one moves from the central area and reaches its minimum on the most marginal eastern fringe. Similarly, in equivalent stages, the head length increases and the head width decreases from the Society Islands outward. It is extremely unlikely that deviations arranged in this fashion are sporadic. Such a pattern of geographic variation removes these cephalic deviations from the realm of chance and deposits them within a frame of meaning.

To some extent the minimum frontal diameter is structurally dependent upon the width of the head and consequently the deviations in this dimension tend to follow the geographic pattern of head width. In general the narrowest brows are found along the eastern and southwestern margin of Polynesia in association with the narrowest heads. The remainder of Polynesia is rather uniform in forehead width except for Hawaii, where the mean is appreciably greater than for any other group. With this exception, none of the other variable dimensions for which data are available reveal so definite a geographic distribution. Their deviations even when con-considerable tend to be irregular.

The variations, therefore, in all these dimensions and indices fall into three categories. One group consisting of stature, bizygomatic diameter, fronto-parietal index and zygo-frontal index is characterized by relatively restricted fluctuations. In my opinion, even the limited range in these means is somewhat greater than the true span. Differences in personal equation, as well as inadequacies in sampling, have undoubtedly expanded the observed values. For example, the bizygomatic diameter measured on the living ranges from 141.32 mm. to 148.4 mm.—a difference of 7.08 mm., while on the skull, with its far greater possibilities for accurate measurement, the means vary only from 134.3 mm. to 137.4,[1] a range of 3.1 mm. Repeated and more extended studies, therefore, of the living Polynesians may well reduce the reliable deviations in these dimensions as well as in some of the others now apparently more variable.

From Hawaii to New Zealand and from Samoa to Easter Island all Polynesian groups closely resemble each other in these particular traits, thereby suggesting a common substratum throughout the area. Such a uniformity implies that the earliest and the latest immigrants shared a basic physical community, whatever additional variations they may have acquired in their history.

The second group embraces head length, head width, cephalic index, and possibly minimum frontal diameter. These characters vary in precise geographical patterns which not only serve to corroborate the validity of their deviations but also to trace the migration movements within Polynesia. It is clear from these distributions that the earliest arrivals, now squeezed out into the eastern margins, were distinguished from later arrivals by long and narrow heads and slightly narrower brows. The successive waves were progressively shorter and wider headed. In other words, the basic Polynesian type was modified in cephalic dimension and proportion while retaining a measure of identity in other traits.

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[1] Wagner, 1937. Mangaia is omitted since its mean is based on an inadequate series.

The third group of traits, including particularly the bigonial diameter, face height and nose height as well as their associated indices, form a widely fluctuating body of traits of uncertain significance. Although much of the variation these characters exhibit may be accounted for by personal equation, nevertheless, even with this allowance some heterogeneity seems to remain. As far as it is possible to judge from the present data, the differences which transcend personal equation fall into irregular patterns which suggest local differentiation rather than migration and diffusion. Although Polynesia, with its numerous small islands, is admirably adapted for the preservation of local variations, it is impossible, however, to demonstrate such an origin for these deviations.

Recently, Wagner published a study of the craniology of the Oceanic races in which he has assembled cranial data relating to Polynesian groups. An examination of this corpus reveals striking parallels to the results obtained from a survey of the anthropometric evidence. Craniologically, the various Polynesian samples exhibit a remarkable degree of uniformity combined with an appreciable heterogeneity in the dimensions of the cranial vault. These differences in the vault resolve themselves into a geographic arrangement which integrates with the pattern for the anthropometric data on the theory that the cranial evidence represents an earlier cross section of Polynesia, modified by the more recent invasion of brachycephalic elements.

I have in this survey deliberately omitted all reference to qualitative traits such as hair form, skin color, and nasal form, not because data are lacking, but because the evaluation of this material is especially difficult and would require more space than I have at my disposal.

From the evidence presented, the following conclusions may, I believe, be deduced. The Polynesian population possesses a fundamental unity in physical type which necessarily implies that the successive immigrants were derived from a common people. It is extremely doubtful that the various waves of invaders were profoundly different racially. This homogeneity does not, however, mean that the Polynesians are a pure-line stock. The present thesis that the Polynesians adhere basically to a uniform physical type differentiable by cephalic dimension and proportion need not be taken to run counter to the hitherto prevailing picture of a composite stock. The present data throw no light on the components of the Polynesian people and consequently are not in conflict with the idea that they are ultimately of mixed origin. Like most other populations, they undoubtedly are. But I believe that the essential composition of these diverse elements occurred before the invasion of Polynesia began. Somewhere outside this area the Polynesians had become welded into a recognizable and distinct population which served as a source from which migrants streamed into the limits of Polynesia. This hypothesis does conflict with the widely held opinion that Polynesia was settled by a number of distinct migrations each characterized by a distinct physical type. Such a conception rests heavily on the discernible differences between the island groups but neglects the broad and consistent similarities which could never have arisen by mixture within Polynesia.

The differences, however, which do occur within Polynesia should not be minimized. As I have already indicated some of them may be explained as local variants likely to arise among small inbred groups. Others, more significant in this context, are distributed according to a geographic pattern that conforms admirably with the direction of migration. These are the variations in head length, head width, cephalic index, and, to a lesser extent, minimum frontal diameter. Indeed, the only reasonable explanation of this arrangement is on the basis that the successive migrants were differentiated primarily in these particular cephalic dimensions.

If it be borne in mind that a considerable gap in time occurred between the first and the latest comers, it is possible to conceive of a gradual and progressive modification of the fundamental type in those particulars by which the successive waves are now distinguishable.

It may be significant that in southeastern Asia and Indonesia an important area of brachycephaly now exists. In Indonesia there is some reason to believe that the earlier populations were more dolichocephalic and were supplanted by rounder headed groups. This expansion of brachycephaly into Indonesia may very probably have been associated with a vast population movement which not only forced out the ancestors of the Polynesians but eventually stamped the last wave with brachycephaly. Whatever this brachycephalic stock may have been like, it was not vastly different from the proto-Polynesian, since the later immigrants to Polynesia were essentially similar to the earlier ones.

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II

POLYNESIAN STONE REMAINS

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UNTIL 1920, when the Bernice P. Bishop Museum launched its program of field work in Polynesia, few archaeological investigations in the area had been attempted, and these few had been scattered and unco-ordinated efforts. This had not deterred speculation on the basis of reports by voyagers, travelers, and settlers. However, the large number of exaggerated, inaccurate and indefinite statements, and the paucity of reliable descriptions had led to the most widely diverging views. Work since 1920 has resulted in a careful check of existing data and the accumulation of much additional material, reliable as evidence, and rich in essential detail. All the main groups and most of the islands of Polynesia have been visited. To be sure, the attention which some of them have received has been slight, and few have been subject to intensive investigation. Yet, even in recent years, it has often happened that a few days of study have provided more data concerning a given island than we already had and have made it possible to correct serious misconceptions.

While all the new material is not yet published, and some still remains filed in note form at the Bernice P. Bishop Museum, certain tentative conclusions can be drawn at this time.

We do not find ruins or artifacts which represent a true break with the historic Polynesian cultures. No Melanesian culture underlying the Polynesian has yet been unearthed. It is unlikely that a dominant group of migrants of different culture would everywhere have taken over bodily a previous culture. It would have effected some sharp changes which would have been registered in some part or another of our material.

Changes we do find, but in the important things they are changes away from widespread and typical Polynesian features toward some local development which often can be laid to a peculiarity of the physical environment.

The fact that practically everything we have discovered has close, if not identical, relations in the historic Polynesian culture gives us a great advantage. This offsets to some extent the difficulties under which the archaeologist in Polynesia labors, owing to the simplicity of the culture of the people who lived on these islands, their lack of pottery, and the rapid decay which attacks all but the most imperishable material.

One is surprised as much by the divergences as by the remarkable similarities which obtain between one part of Polynesia and another. To attempt to interpret them satisfactorily is a fascinating game in which one must expect to commit mistakes more than once. But we can hardly expect to approach the truth by any other process than this one of trial and error. In Polynesia archaeological material gives us a basis from which to work, which has some obvious advantages over other material, and archaeological findings will always exert a certain control over the conclusions drawn from other studies. Within the brief span allotted this paper I shall sketch indications which have become apparent to me, and perhaps to others, in considering the stone work and the most important stone structures. I shall go very little into details as they may be found in the past or forthcoming publications of the Bernice P. Bishop Museum or in publications referred to in the Bishop Museum series.

STONE WORK

Coral-conglomerate, reef-rock employed in blocks or slabs, has led to several false reports that people who anciently occupied Polynesia were familiar with mortar or cement. All ancient walls and facings in Polynesia were laid up dry.

In the Coral Islands limestone slabs constitute the sole source of suitable building stone. Rectangular slabs were selected, or broken out, or even cut from the reef flats. In putting them into a facing, the great saving in labor gained by planting the first course of slabs on edge, and the neatness of such a facing, was fully appreciated. Upper courses could not be set on edge and must therefore be laid horizontally. Large slabs did away with the necessity of upper courses of horizontal slabs. In the leeward Society Islands, where limestone was readily available, larger and larger slabs were set on end in the facing of marae platforms as rivalry called for larger platforms. This produced an imposing platform of megalithic slabs very different in appearance from the marae platforms of the windward Society Islands, which were faced with the relatively more abundant stream boulders.

The setting of slabs on edge, a practice almost bound to be brought about by atoll people erecting stone structures, was so widespread in Polynesia that we may consider it as an original feature of the culture, and one which probably was introduced as a result of their sojourn in the atolls. The similar treatment of basalt slabs and blocks of tuff, seen in structures on the volcanic islands, is probably a carry-over from the practice of handling limestone slabs.

The powerful kingdom of Tonga, with its center at the raised coral island of Tongatabu, attained the highest development in the use of reef-stone. This extended to the cutting and fitting of huge blocks up to 25 feet in length and 4 feet in height, the beveling of upper edges, and the use of L-shaped corner stones. The great trilithon, Haamonga-a-Maui, perhaps the best known monument in Polynesia, is the outstanding oddity in stone created by the Tongans.[1]

For the working of hard basalt the Tahitians can claim the most distinction, although the Easter Islanders may dispute the claim. The amount of worked basalt in Tahiti, Moorea, and Meetia, the main islands of the windward Society Islands, is greater than that in Easter Island, but most of this work does not appear elsewhere in Polynesia. The Tahitians took small river boulders, flattened the top, bottom, and sides by the laborious pecking process, and so fitted them in even courses in the facing of their maraes. The first course of all these facings and the corner stones were squared blocks or slabs of coral, tuff, or basalt.

In the Marquesas where there seems to be a considerable amount of tuff, and practically no limestone, blocks of tuff were more extensively employed than anywhere in Polynesia. Although tuff is abundant at Mangareva, we have no record that it was ever shaped. Rectangular limestone slabs were set on edge in the same manner as in the Marquesas. At Easter Island the step along the court face of image platforms was faced with carefully dressed rectangular slabs placed on edge or on end.[2] The idea of thus facing the platform on which the images stood could have been brought from the Marquesas if the Easter Islanders came from that group. In the facing of the high seaward wall of many Easter Island platforms great natural slabs of basalt were set on end, the gaps between filled in with small slabs laid horizontally, and several courses of such slabs added. This work does not differ, from much which may be seen in the leeward Society Islands, except that the slabs were not planted in the ground. The bare rocky ground made it necessary to set the bases of the slabs on flat stones.

The abundance of basalt crystallized into nearly rectangular blocks will explain the use of these in the outer facing of some of the larger image platforms of Easter Island. In the finest platforms these blocks have been dressed and most carefully fitted, presenting the best work of this kind in Polynesia. The several tuff blocks with a jog cut in the upper edge, which I observed on the little island of Meetia but not on any other islands of the Society group, suffer in comparison with the Easter Island work.

The cutting of simple jogs in partly dressed blocks in the facing of a prehistoric aqueduct on the island of Kauai in the Hawaiian Islands,[3] and the discovery of similarly treated stones which had been assembled in a terrace or platform at Kailua on the island of Hawaii,[4] may represent an attempt on the part of the traditional twelfth or thirteenth century visitors from Tahiti to introduce cut stone work into the Hawaiian group. These two examples of dressed stone in Hawaii are certainly in marked contrast with all other stone work there. But the cutting of jogs in the Society Islands is limited to several blocks on one of the most insignificant islands.[5] The Polynesians were familiar with scarf joints in the fitting of their canoe planks and house beams, and it would require no great ingenuity to turn to them when confronted with the problem of fitting stone blocks. Once courses of blocks are used, unless all are exactly the same height, a mason will probably sooner or later be compelled to cut some jogs. I find it difficult to believe the Kauai masons were copying the several blocks on Meetia Island when scarfing blocks, or that the Easter Islanders were thinking of the Society Islands when they first did the same. In fact, the more I study stone work the more I am convinced that there is none of it in Polynesia which could not have developed quite easily in Polynesia itself. That the highest developments in stone work are local developments appears certain from a study of the structures in which they appear. These are not the structures which were first erected by the Polynesians. By the time they came to building platforms faced with dressed stone, the acquaintance which their ancestors might have had with similar work in Asia or Indonesia would have been a scant practical help. As for a South American origin, the Polynesians could have learned some of the details of the dressing and fitting of stones from that region if they had had contact with that part of the world, but let me reiterate that they need not have had any relations with South America to have produced what they did.

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[1] McKern, 1929, p. 63.

[2] Routledge, 1919, p. 168.

[3] Bennett, 1931, p. 105.

[4] Emory, 1933a, p. 47.

[5] Emory, 1933a, p. 118.

STRUCTURES

By far the most important stone structures in Polynesia to an archaeologist bent on historical reconstruction are the platform graves or tombs, and the maraes, or sacred places for religious ceremonies, marked by enclosing walls, terraces, platforms, stone images, or upright stones. In eastern Polynesia maraes are a prominent feature of the culture, and tombs absent or inconspicious; in western Polynesia, the reverse is true.

The only stone houses in Polynesia are the special fowl houses of Easter Island which are little more than elongated cairns through which extend simple vault chambers.[6] Such vaults, for burials or the keeping of objects at sacred places, were constructed nearly everywhere in Polynesia and Micronesia.

Owing to our acquaintance with temple sites beginning largely with Hawaii and the Marquesas, where bewildering variation prevails, we have despaired of learning anything of value by a study of them. If we begin with Tahiti, however, we can now pick up threads which can be followed to a great distance and which clarify the situation in Polynesia.

Sacred Places of Central and Outer Polynesia

In Tahiti the maraes on the coast were stepped platforms placed across one end of an enclosed rectangular court. Most of these platforms had two or three steps, in addition to an extra bottom step, found on three sides only, and formed by the court wall passing around the two ends and the outer side.[7] (See pl. II, fig. a.) The great stepped pyramid of stone which so impressed Captain Cook and which served as the subject for a beautiful engraving by Wilson[8] was the marae of Mahaiatea. This platform had ten steps and measured 267 feet in length, 87 feet in width, and 50 feet in height. The court adjoining the west face was 290 feet long.[9] (See pl. II, fig. b.) The platform and court walls were faced with a first course of squared stones and upper courses of round-faced stones squared in cross section. This monument was erected between 1766 and 1767 by the high chieftess of Papara, Purea, for her son, Terii-rere. Nearby was the ancient family marae, Te-Tooarai, a very small affair.[10] Marae Mahaiatea was the largest stone structure ever reared in the Society Islands. In the two centuries preceding, several maraes with platforms of more than three steps had been erected on Tahiti and its neighboring island Moorea, but it is very doubtful if any were in existence prior to this time.[11]

In the interior of Tahiti and Moorea, the maraes were simple platforms set along one end of a rectangular court, which was usually unenclosed. On the back of the platform an upright stone slab stood midway between the ends. On a few platforms an upright also stood near each rear corner. Invariably, three upright stones stood against the face of the platform. Out on the court a single upright stone back-rest, or a pair of them, stood midway between the sides. Along the sides were additional uprights. (See pl. II, fig. c.) In the great coastal maraes, the court uprights may be observed, but carved boards called *unu* took the place of the stone uprights on the platform.

There can be no doubt that the coastal maraes evolved from the simple inland maraes of the common people. These simple maraes are the ones we find in the Tuamotuan area to the north and west, and very similar maraes (see pl. III, fig. 1) make up most of the prehistoric remains on the little island of Necker in the chain of islets extending to the northwest of the main Hawaiian

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[6] Routledge, 1919, p. 218, fig. 86.

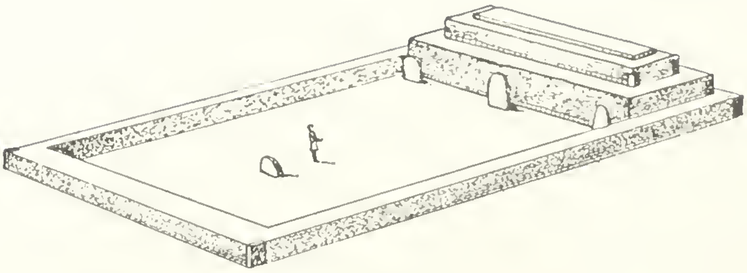
[7] Emory, 1933a, fig. 6.

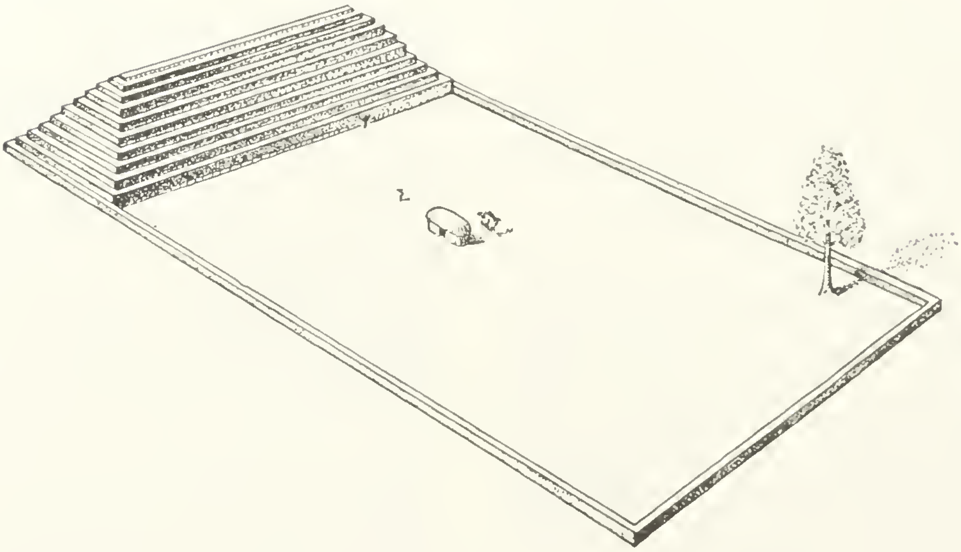
[8] Wilson, 1799, facing p. 211.

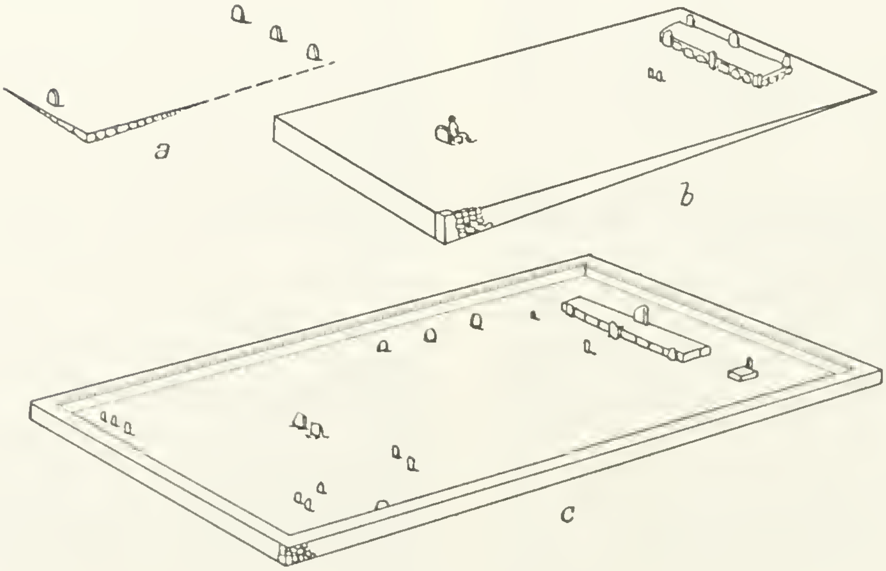
[9] Emory, 1933a, p. 73, fig. 7.

[10] Emory, 1933a, p. 74.

[11] Emory, MS-1.







Tahitian maraes.

group.[12] On uninhabited Sydney Island of the Phoenix group north of Samoa, a marae of this type, probably erected by some wanderers from the east, was recorded in 1933.[13] The maraes of Tongareva, or Penrhyn atoll, are closely related.[14] It is an ancient form of marae in Polynesia; transitional forms leading to the stepped-platforms of the coastal Tahitian maraes have been discovered in Tahiti and Moorea.[15]

The Necker maraes, with their continuous row of uprights along the back of the platform, are most like the maraes of the more isolated eastern end of the vast Tuamotuan Archipelago. Although Necker was unknown to the historic Hawaiians, its ancient visitors certainly came from the main Hawaiian group, as the squid-lure sinkers and adzes found on the island are Hawaiian. Crude replicas of the Necker maraes were discovered by the writer in 1937 at the quarries of the adze-makers on the 12,500 foot contour of Mauna Kea, the highest mountain on the island of Hawaii. At Puu o Umi on the slopes of neighboring Mauna Loa, a low, narrow platform, bearing uprights similar to the Necker marae, has been photographed. (See pl. V, fig. 1.) But the Necker type of marae has been all but obliterated in Hawaii.

In the Hawaiian dictionary the word *'eho* is defined as "a collection of stone gods." In the Tuamotuan language *'eho* would be *keho*, the word applied to the upright stones along the back of the marae platform as well as to the stone slab back-rests out on the court.[16] *Keho* is a term used by the Marquesans for the stone slab back-rests on their house platforms.[17] And in Tahiti *aho* (='aho?) are upright stones on the marae court serving as supports for dummy priests.[18]

In New Zealand, the place of the marae of Tahiti and the Tuamotus is taken by the *tu-ahu*. The illustration of one given by Best[19] shows four stone slabs set in a row at one end of the sacred place. (See pl. V, fig. 2.) This seems to be the Tuamotuan marae reduced to simple terms. *Tu-ahu* or *ahu* is the name applied by the Tahitians and Tuamotuans to the most sacred part of the marae, the raised platform bearing the uprights. *Ku-ahu* is a term applied by the Hawaiians to a raised platform at one end of their sacred structures.[20] In the Marquesas their sacred structures are called *me'ae* (=Tahitian marae) in the southern part of the group, but *ahu* in the northern part.[21] The great image platforms of Easter Islands are called *ahu* and follow the general plan of the Tuamotuan marae with its line of upright stones planted on the back of a platform (*ahu*) facing on an unenclosed court.

In this connection it is desirable to survey western Polynesia to see what takes the place in that area of the maraes of eastern Polynesia.

Sacred Places of Western Polynesia

In Samoa and Tonga a god house, differing in no important respect from other houses, stood on the village assembly ground or *malae*, or in some spot by itself.[22] In the neighboring atolls of the Tokelau, Gilbert, and Ellice Islands, however, one or two slabs representing the principal gods, most of whom were deified ancestors, stood in the open beside the god house. The god house and upright slabs were erected on the assembly ground, termed *malae*, in the Tokelau and Ellice Islands. (See pl. V, fig. 3.)

In the Tokelau Islands a small enclosure was built on the *malae* for the disposal of rotted mats which had adorned the sacred slabs.[23] This enclosure corresponds to the sacred refuse pit or enclosure which is such a prominent feature of Tuamotuan and Hawaiian sacred places. In the Gilbert group each upright stood at the end of a little platform on which offerings were laid and was tied round with a coconut leaf.[24] (See pl. III, fig. 2.) At Napuka in the Tuamotus, the principal slab stood at the very end of the marae court, before a little platform, and it also was tied round with a coconut leaf.[25] (See pl. III, fig. 3.) The fact that the Ellice Islanders regarded their upright slabs which stood beside the god house as shrines and termed them *afu*, a word meaning a mound or pile, and that Kennedy discovered at Vaitupu in the Ellice group several *afu*, which were raised platforms or tables,[26] indicates that in the Ellice Islands, as in the Gilberts, the up-

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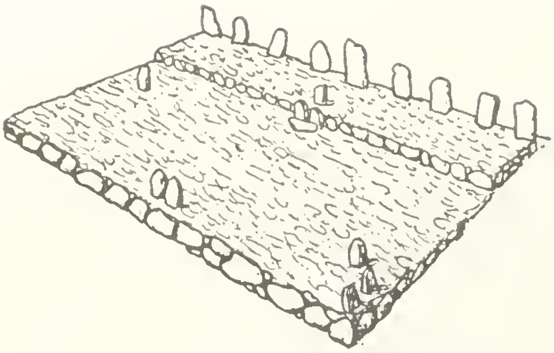
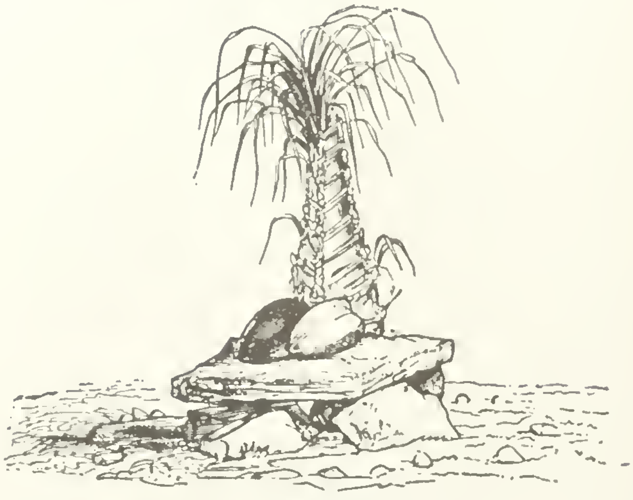
[12] Emory, 1928.
[13] Emory and MacGregor, MS.
[14] Buck, 1932, pp. 148–180.
[15] Emory, 1933a, pp. 31–32.
[16] Emory, 1933b, p. 10.
[17] Handy, 1923, p. 351.
[18] Emory, 1933b, p. 14.
[19] Best, 1924, p. 289.
[20] Emory, 1924, p. 53.
[21] Linton, 1925, p. 31.
[22] Buck, 1930, p. 70; McKern, 1929, p. 100.
[23] MacGregor, 1937, p. 65.
[24] Wilkes, 1844–1846, vol. V, p. 74, ill. p. 116.
[25] Emory, MS-3.
[26] Kennedy, 1931, pp. 314–315.





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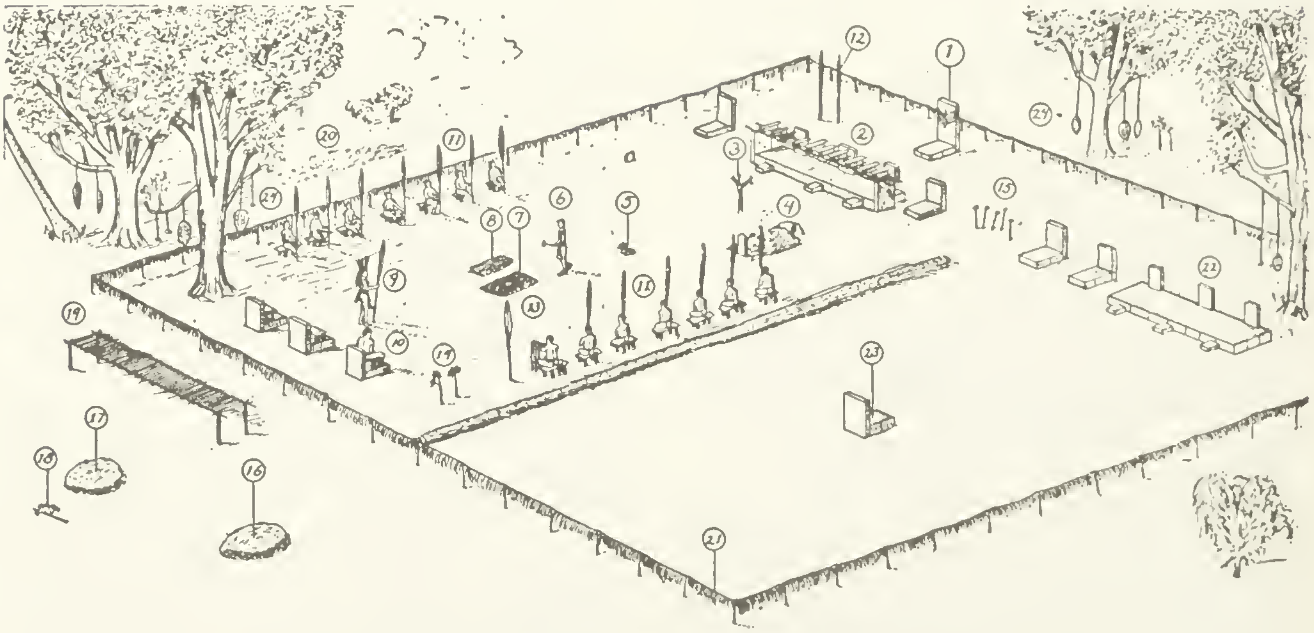

1, Marae from Necker Island; 2, Gilbert Island shrine; 3, Marae Rangihoa at Napuka.

rights also stood before a platform, although this apparently was not true in the Tokelaus.

Within the god houses of the Ellice Islanders were hung racks or coops containing the skulls of deified ancestors and sacred representations of the gods. This rack, we are informed by Hedley,[27] was called a *fe‘ou*.[28] In the Tuamotus the store house in which the sacred relics of departed ancestors were guarded was termed[29] a *fare heiao*, or *fare heiau* (*heiau*, house), and at Mangaia, in the Cook Islands, the house in which the representations of the gods were kept was called, according to Buck,[30] a *‘are ei ‘au*. From the fact that the translation "house for peace" is a little awkward for this, I believe it may represent *‘are ‘eiau* (=*fare heiau*, in the Tuamotuan dialect). In the Marquesas we come across the term *heiau* in *feiau*, a certain house erected on a sacred place,[31] and *heiau* is the term applied in Hawaii to all large sacred places. The term "marae" for a sacred place or assembly ground was not known in Hawaii.

Bearing of the Sacred Places of Western Polynesia on Those of Outer Polynesia

The fact that in eastern Polynesia the term "marae" for the sacred place is limited to Tahiti and its vicinity, and that it is lacking in the most distant part of the Marquesas, in Easter Island, Hawaii, and New Zealand, is significant. We see that in outer Polynesia the sacred place is so tabu that it is segregated from the general assembly place. The Tahitian term "marae" indicates that the sacredness of the shrine, *ahu*, eventually extended to the whole original assembly ground, so that the term "marae" was taken over bodily for the sacred place. This would seem to have happened after the traditional migrations to Hawaii and New Zealand, for in New Zealand the marae is the open space before the meeting house, a space also called the *tahua*. In Hawaii, *malae* simply means calm, or smooth as a plain, and *tahua* is applied to an assembly ground. But it is interesting to note that a *heiau* on Kauai is named Malae;[32] probably this was named before *malae* as an assembly place had been entirely forgotten.

At Mangareva the introduction of maraes is attributed to the time of *Tupa*, or twenty generations before 1900,[33] which would be shortly after the supposed last known contact between Tahiti and Hawaii on the one hand and New Zealand on the other. As Mangarevan culture is certainly derived largely if not wholly from the Marquesas, the fact that their sacred places are called marae indicates that the Mangarevans came from the southern part of the Marquesas after this term had spread from Tahiti to the Marquesas.

The maraes of Mangareva were platforms which faced on an open court, were stepped along the court face (see pl. IV, fig. 1), and contained burial vaults. They resemble the Easter Island image *ahu* more than any other such structures in Polynesia, but they lack the stone images. Inasmuch as the Easter Islanders called their structures *ahu*, they are not likely to have derived them from Mangareva. The affinities of the Easter Islanders lie as much with the Marquesans as with the Mangarevans, and the closeness of Easter Island culture to that of Mangareva is undoubtedly due to a common Marquesan origin. The situation seems to be reflected in the distribution of domesticated animals: the Tahitians had the pig, dog, and fowl; the Marquesans, the pig and fowl; the Easter Islanders, the fowl; and the Mangarevans, the pig. If the Mangarevans had reached their islands without the fowl, the Easter Islanders could not have brought the fowl with them from Mangareva but must have brought it directly from the Marquesas. But if the Easter Islanders came from the Marquesas, they must have left from the northern part, or before the term *me'ae* for the sacred places supplanted *ahu* in the southern part.

In the Marquesas the ruggedness of the country would have broken down uniformity in the arrangement of terraces and platforms in their sacred structures, but the related *ahu* of Easter Island and the marae of Mangareva suggest that in early times uniformity was attempted.

On the Mangarevan marae a temporary god house was erected when ceremonies were to take place,[34] and this is true also of the Marquesan *me'ae*,[35] although this house in the Marquesas was called the house of the inspirational priest. He, however, served as the god while possessed. His

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[27] Hedley, 1896-1897, p. 47.

[28] The glottal in this word cannot represent a dropped "k" or "ng" or "h," as it does in some dialects, for the Ellice Islanders dropped none of these.

[29] Emory, MS-3.

[30] Buck, 1934, p. 173.

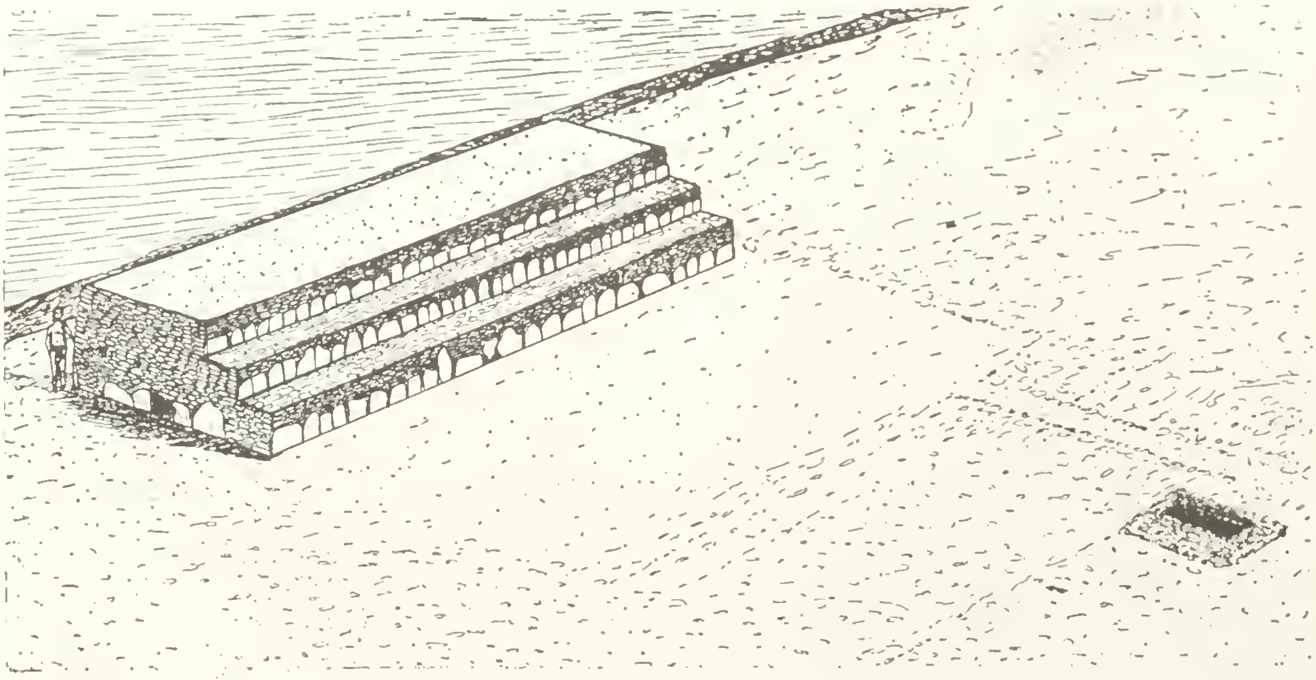
[31] Handy, 1923, p. 234.

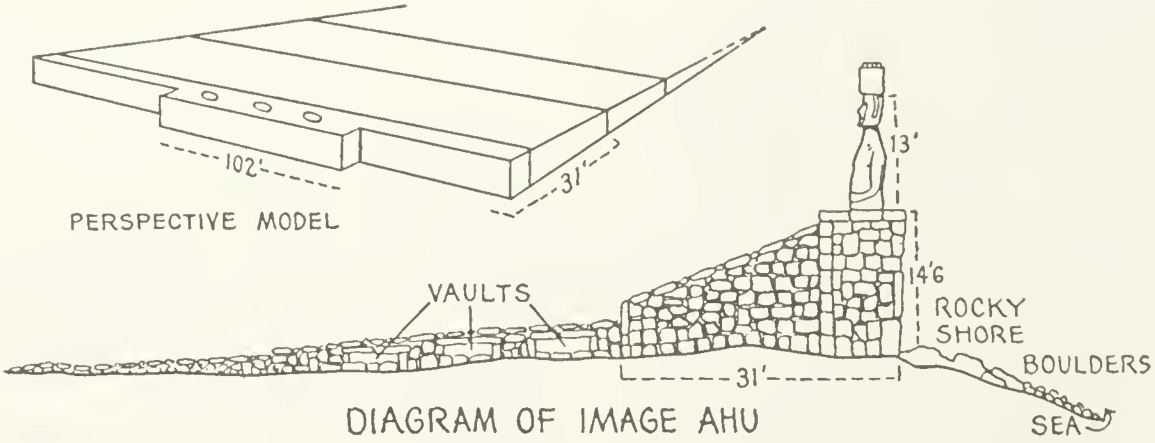
[32] Bennett, 1931, p. 124, fig. 37.

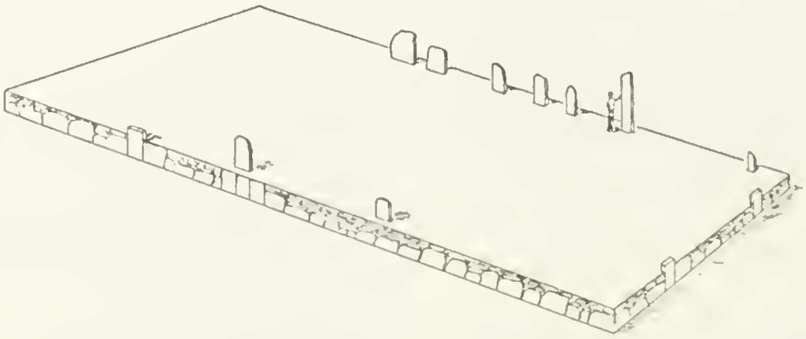
[33] Buck, MS.

[34] Buck, MS.

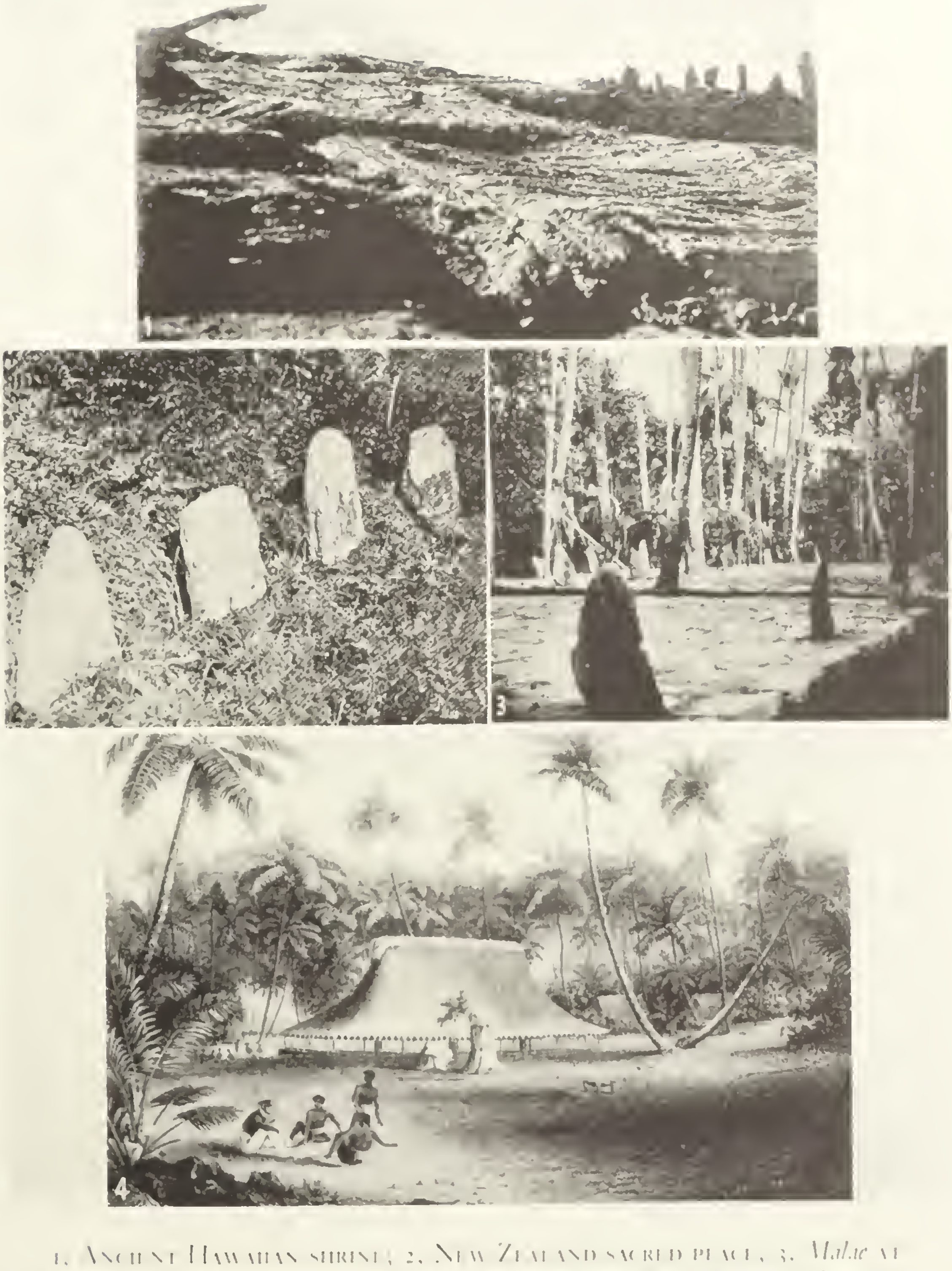
[35] Handy, 1923, p. 231.







1, Mangarevan marae; 2, Easter Island image *ahu*; 3, council platform at Maeva village, Huahine.



1, Ancient Hawaiian shrine; 2, New Zealand sacred place, 3, *Malae* at Fakaofu, Tokelau Islands; 4, dancing platform, Yap, Caroline Islands.

house was usually erected on the highest or most conspicuous terrace or platform. In the neighboring Tuamotus, the god house is the *fare tini atua* (house for the multitude of gods), a miniature house, one of which was possessed by each family. It was placed during ceremonies on a scaffolding called a *raga-nuku* (support for hosts) which was erected before or over the *ahu*.[36] Parkinson[37] gives us a sketch of the famous marae Taputapuatea at Opoa, Raiatea, showing god houses on their rack placed against the face of the *ahu* in the Society Islands. In Hawaii the place of the temporary god house is taken by the temporary *lana-nu'u* (=*raga-nuku*, Tuamotus), a lofty scaffolding which stood on the most sacred end of the *heiau*. The priest climbed onto a stage of this scaffolding to announce the will of the gods. In the Marquesas "ananuu," = 'ana-nu'u? (=*raga-nuku*, Tuamotus) was some sort of a shrine or structure erected at sacred places, and, according to one description, in the house of the inspirational priest.[38]

At many of the Marquesan *me'ae* images both of wood and stone seem to have been placed haphazardly on and about the terraces and platforms. But the statement by Stewart[39] indicates that some order in the placing of the images prevailed at some of the Marquesan *me'ae*. He says that the temple houses seen at Nukuhiva contained three images, one at each end, opposite and facing each other, and one in the middle against the thatch. This suggests the three stones set up along the back of every Tuamotuan marae platform (*ahu*) in the central and western Tuamotus.

The Easter Island *ahu* with their straight row of tuff images along the back have the same definite arrangement as the slabs on the *ahu* of the eastern Tuamotus and Necker Island marae. The Easter Island statues suggest the older arrangement, and, therefore, I am inclined to think that they broke away from the Marquesas earlier than the Mangarevans.

The Easter Island images do not represent the body below the waist, and thus they suggest figures seated on the *ahu*. At the marae on Necker Island, where small stone images were found, the images numbered the same as the upright slabs and probably had been propped against them.[40] In the Tuamotus each of the individual slabs standing on each side of the *ahu* faces on a little platform of its own, which really represents an individual shrine. These separate slabs in line with the *ahu* bore the name of ancestral gods, and offerings were placed before them. They differ in no particular from the *afu* of the Ellice Islands and the corresponding sacred stones in the Gilberts, nor do they differ from the raised stone seats and stone back-rests for the chiefs which were placed out on the courts of the Tuamotuan maraes. This has led me to believe that the uprights for the gods marked seats reserved for them. This view seems to be confirmed by the fact that at Tuamotuan maraes, and apparently at the maraes of Necker Island also, the gods were not represented by upright slabs but by other objects. Also, the uprights on the main platform (*ahu*) of the western Tuamotus did not bear names of ancestors or gods. The central upright was dignified by some special name. It is probable that the three uprights served as did the three uprights, before the *ahu* of every Tahitian marae, to mark the first, second, and third places of honor for the gods or their representatives attending services at the marae. At Reao, in the extreme eastern Tuamotus, however, each *ahu* upright seems to have been erected for a particular god.

It can readily be seen that if these slabs were set up originally as back-rests for the gods, they might easily be taken to represent the gods as much as images would. At the island of Fangatau and Tatakoto in the Tuamotus some slabs were shaped crudely in the outline of the human form.[41] While the object of this was embellishment, as indicated by the fact that the chief's leaning slab was similarly shaped, it does illustrate how a back-rest reserved for a departed ancestor might be converted into a representation of him. In the *heiau* on Kauai in the Hawaiian Islands, sketched by Captain Cook's artist, the wooden slabs which are arranged after the fashion of the stone slabs of Necker maraes are carved with a human face. On the island of Hawaii, in place of the straight lines of slab images, we have descriptions of a semi-circle of wooden images in the round placed at one end of the court. The transition of the upright slabs of the early Polynesian marae into images seems actually to have taken place whatever their original intent.

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[36] Emory, MS-3.

[37] Parkinson, 1773, pl. 10.

[38] Handy, 1923, pp. 233–234.

[39] Stewart, 1831, p. 290.

[40] Emory, 1928, p. 100.

[41] Emory, 1933b, p. 8.

Stone slab back-rests are known in western Polynesia, although, like the slab shrines placed beside the god house, if they existed in Samoa and Tonga, they had been given up by the time Europeans arrived. Percy Smith[42] records the use of slab back-rests for the chief and dignitaries at Niue Island, and even the occurrence of an upright slab placed at one end of a sacred place consisting of a rectangular platform, 60 feet long and 50 feet wide. Burrows[43] has made the plan of a *malae* at Futuna, with a row of slab back-rests along one side. Raymond Firth told me of stone slabs set up as seats for the gods at a *malae* on Tikopia. The sacred slabs at Fakaofu in the Tokelaus, however, were thought to be the residence during ceremonies of the gods they represented.[44] On Upolu, in the Samoan group, the stone slab, 4 feet 8 inches high, rising from the back of a little stone platform or seat, 4 by 5 feet, and 10 inches high, at one end of the ancient house terrace known as Le Fale-o-le-Fée (The House of the god Fe'e), is called "Sina's seat"[45] and may very well be a survival of the stone shrine standing beside the god house that we have found in the Ellice Islands and the Tokelau group and which would seem to have gone out of existence in Samoa.

At Banaba, or Ocean Island, an island west of the main Gilbert group but occupied by Gilbertese, slab back-rest seats were occupied by workers of magic,[46] and at the best preserved of their seventeen "terraces" which have some remarkable parallels with eastern Polynesian maraes, seven stone monuments stand in a line on the seaward side of the terrace.[47] The central monument was a slab table, but the three monuments on each side were upright slabs. As to what they stood for, the only information that could be elicited from the old men who had used the terrace in their youth was that the table served for offerings and the uprights for back-rests. The fact that offerings were placed on the "table" and that in the main Gilbert group both Wilkes[48] and Turner[49] record that female gods were represented by prone slabs and male gods by upright slabs, make it possible that the monuments on the Banaba terrace represented ancestral gods. Gill records an arrangement of slabs representing gods at the island of Niutao in the Ellice group.

"The natives of Niutao were accustomed to worship their heathen deities in a marae in the center of the village. Of this great marae only one stone is now left, representing Tangaroa . . . merely an upright slab, not unlike a headstone in an English grave yard. . . . Half a mile distant in the bush is their burial ground. Adjoining it is their pantheon, consisting of an oval, low enclosure, composed of flat stones, some higher than the others, each representing a distinct divinity, so that the sacred men standing inside the enclosure—the people of course outside—could worship all the gods at once."[50]

At Tongareva Island north of the Cook Islands, several circular enclosures of upright slabs occur,[51] but the regular arrangement at their maraes is a row of tall uprights along one end of a rectangular court, and evenly spaced smaller uprights along the two sides and opposite end. Some of the maraes have an *ahu* or low stone platform at the end with the tallest slabs, and some have none. This brings me to the consideration of another type of marae recorded for eastern Polynesia.

Slab Enclosures

In the leeward Society Islands, and evidently disappearing from use in historic times, were large, low, rectangular platforms of stone on which warriors met in council and on which feasts were held. These had stone slabs set up undoubtedly as back-rests along the four sides. They were called marae in spite of the lack of an *ahu* or sacred raised-platform at one end, and were also called *tahua*.[52] (See pl. IV, fig. 3.) These structures owe their existence, I believe, to the time when the marae was largely secular. The maraes of the Austral Islands south of Tahiti, concerning whose function we know practically nothing, were rectangular slab enclosures. In those at Tubuai the slabs, facing inwards, are spaced along three sides of the rectangle[53] and in those of Raivavae the slabs are set in a fence[54] around all four sides. As the Australs were closely connected culturally with the Society Islands, I

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[42] Smith, 1902, p. 147.

[43] Burrows, 1936, p. 124.

[44] MacGregor, 1937, p. 65.

[45] Buck, 1930, pp. 328, 691, and plate 35c.

[46] Maude, 1932, p. 281.

[47] Maude, 1932, pp. 279–283.

[48] Wilkes, 1844–1846, vol. V, p. 91.

[49] Maude, 1932, p. 296.

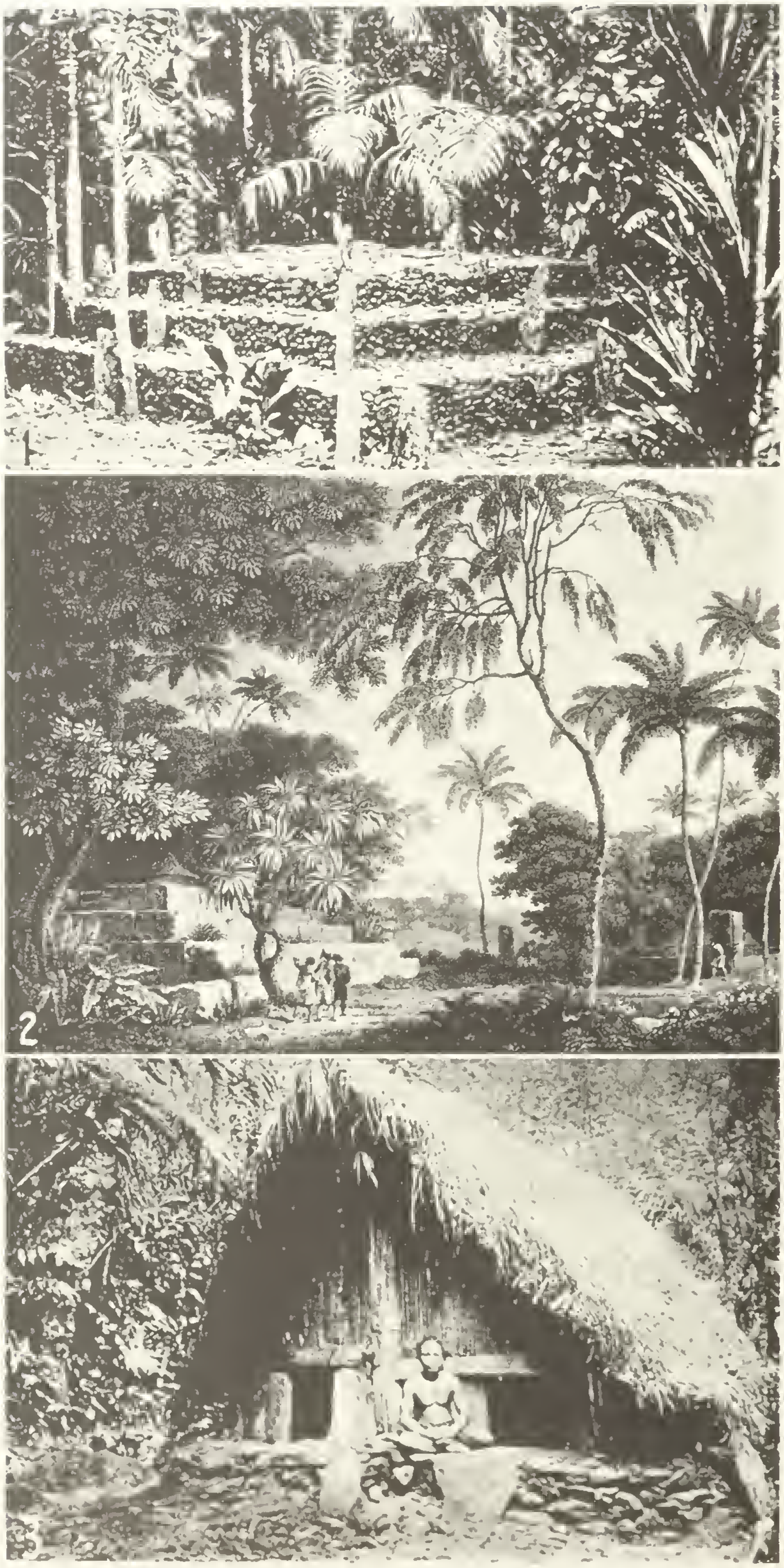
[50] Gill, 1885, p. 12.

[51] Buck, 1932, p. 180.

[52] Emory, 1933a, pp. 35–130.

[53] Aitken, 1930, pp. 118–127.

[54] Routledge, 1921, pp. 442–453.



1, Chief's tomb, Yap; 2, sacred house, Yap; 3, Tongan *langi* at Mua, Tongatabu.

believe the Austral marae is derived from the same source as the ceremonial platforms of the leeward Society Islands. The facts that the marae courts of Tongareva are entirely enclosed by spaced slabs facing inward, and that some of these marae are without an *ahu*, show that a ceremonial structure consisting of a rectangular court enclosed by stone slabs, which may originally have been back-rests but which came to be ornamental, is old in central Polynesia.

The *tohua* (=*tahua*, generally) or secular ceremonial places of the Marquesas, many of which are great rectangular terraces and platforms set about with walls, seats, terraces, or platforms for the spectators, partake of the same nature. The Hawaiians have carried and applied the name to their assembly grounds (*kahua*) where dances, games, and contests were held, but they have not adorned them with stone seats or platforms.

It is possible that the slab enclosures of central Polynesia harken back to the ceremonial dance platforms set about with stone slab back-rests which are so conspicuous in the Carolines.[55] (See pl. V, fig. 4.)

Platform Tombs

I have frequently heard the Hawaiian *heiau* compared with the sacred enclosures of Ponape and Kusaie in the Caroline Islands of Micronesia, but there are fundamental differences between the two. In the center of these Caroline enclosures rises a stepped-platform tomb.[56] Chiefs were not buried in a platform at the *heiau*, and none which have been recorded had a platform rising in the center. As the relics found in the Caroline tombs and in and about the enclosures are typical of those of the historic inhabitants, we cannot be sure they were being erected far enough back in time to have been known to the early Polynesians who passed through that region. But the stepped-platform tombs of chiefs which one may see throughout the Carolines[57] (see pl. VI, fig. 1), have equivalents in the stepped-platform tombs of Samoan and Tongan chiefs. While the eastern Polynesians were undoubtedly acquainted with simple platform tombs, resorting to them at Tongareva, to a limited extent in Hawaii, and here and there in other parts, they were not at all a conspicuous feature outside of western Polynesia. The fact that the chiefs and important people were buried at the marae, or that their bodies were temporarily disposed of there before being removed to the family burial cave, is probably responsible for the lack of development of platform tombs in eastern Polynesia. The *ahu* of Easter Island and the mortuary *me'ae* of the Marquesas would take the place of platform tombs, and the burial vaults in the maraes of Temoe atoll,[58] colonized from Mangareva, prove that they served in a similar capacity. The western Polynesians, on the other hand, while paying very little attention to their religious structures, concentrated on their burial platforms. This emphasis led the Tongan chiefs to the high architectural achievement which culminated in their finest *langi*, Paepae o Telea, which was built thirteen generations ago in about the sixteenth century.[59]

Not all the Tongan *langi* were platforms or mounds. Wilson's splendid engraving[60] shows that the *langi* next to Paepae o Telea was a rectangular enclosure of curbs intercepted at the corners by high stone slabs. (See pl. VI, fig. 2.) The grave house stood somewhere in the middle. Other *langi* described by McKern[61] had ornamental slabs rising in the line of curbs. On Fanning Island, which lies 1,500 miles from Tonga and was uninhabited when discovered, *langi* of this type, together with adzes of Tongan type, indicate Tongan occupation of this atoll. The presence of L-shaped corner stones in the *langi* indicates that the occupation must have taken place about the sixteenth century, for this is a peculiarity of Tongan stone work of about that time.

These Tongan *langi* enclosed by curbs and ornamented by upright slabs, some of which are shaped into upward projections, have an outward appearance quite similar to the Tongarevan marae without an *ahu*. Both enclosures mark off a reserved tabu place and show that a sharp line cannot always be drawn between religious and mortuary structures. Kennedy[62] found burials under Ellice Island *afu* or shrines, and old Te Mae of Napuka told me that some chiefs were buried at the principal upright slabs on their maraes. Considering that much of the religious ceremonial centered around deified chiefs, it is not surprising that tombs and religious structures overlap.

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[55] Cf. Muller, 1917, pl. 53.

[56] Hambruch, 1936, p. 34.

[57] Cf. Muller, 1917, pl. 66.

[58] Emory, MS-2

[59] McKern, 1929, pp. 51, 79.

[60] Wilson, 1799, facing p. 284.

[61] McKern, 1929, pp. 34-62.

[62] Kennedy, 1931, p. 314.

SUMMARY

The Tokelau and Ellice Islanders, for all their recent contact with Samoa, have preserved more closely than Samoa some of the original elements of Polynesian culture. This is seen for example, in their language which has kept the consonants dropped elsewhere. To be free of immediate influence from historic Samoa we can go far westward to the little atoll of Kapigamaragi, probably an old Samoan colony, which with Nukuoro, south of the central part of Micronesia, represents the westernmost islands where Polynesian culture held sway. Here we find the god house on an open space within the village and next to it the upright stone representing their principal god, a deified ancestor.[63] The slab is termed a *hatu*, the western Polynesian word for stone in general. In Hawaii stone is called *pohaku*, but in the central Tuamotus it is a term applied solely to the sacred slabs on the marae.

In the Tokelau and Ellice Islands platform graves and the god house and stone shrine on the *malae* we seem to have the original complex which gave rise to what we find in western as well as in eastern Polynesia.

The god house extends right across Polynesia, with certain modifications. The stone shrine drops out almost if not entirely in Samoa and Tonga but takes on enormous importance in eastern Polynesia, usurping not only the *malae* but the platform tombs. The *malae* becoming too sacred for secular functions, the *tahua* takes its place in eastern Polynesia.

Slab back-rest seats are an ancient element in Polynesia and seem clearly to have been brought from Micronesia into both western and eastern Polynesia where their use was largely abandoned. Slabs placed in the open as seats for gods, as well as representing gods, were known in the Carolines.[64] (See pl. VI, fig. 3.) The use of such was evidently carried across Polynesia to the eastern Tuamotus, up to Hawaii, and down to New Zealand. I say up to Hawaii and not from Micronesia to Hawaii, because what Hawaii and the Society Islands and the Marquesas shared in common, and to the exclusion of western Polynesia, apparently developed in the Marquesas and Society Islands, and not in Hawaii. The stone adzes illustrate this. The Hawaiian adze is found in the Marquesas and Tahiti, but its prototypes have been found only in Tahiti and the Marquesas. Hawaiian culture is, therefore, in the main at least, derived from southeast Polynesia, and not vice versa.

If it is true that the stone shrines, *afu*, of the Ellice Islands, represent an original feature which was dropped by the Samoans as time went on, but which was retained and developed by the eastern Polynesians into the *ahu* or *tu-ahu* I have described, then we need not assume that Samoa was settled by one wave of migrants bearing one culture and eastern Polynesia by another wave bearing a different culture. Samoa on the one hand and Tahiti on the other may have been settled by the same people at about the same time, and then, in their isolation, with occasional contacts with each other and with people to the west, may have developed what the Europeans saw when they first discovered these islands.

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[63] Eilers, 1934, pp. 5, 133.

[64] Muller, 1917, pl. 68, and Kramer, 1919, figs. on pp. 35, 69, 222.

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III

TWO UNIQUE PETROGLYPHS IN THE MARQUESAS WHICH POINT TO EASTER ISLAND AND MALAYSIA

Edward S. Craighill Handy

BEFORE proceeding to a discussion of the Marquesan petroglyphs, a word in explanation of their selection as the subject of my contribution to this volume will permit me to indicate certain trends in the ethnographic study of the Pacific area which are of larger significance than the specific facts and inferences to be described.

Theories about Polynesian racial and cultural history have already passed through three distinct phases. First came the period of discovery, beginning with the voyages of Mendana and Quiros who discovered the Marquesas in 1595, and ending with the Wilkes Expedition of 1838 to 1842. In this era of free speculation, based on a modicum of observation, the Polynesians were introduced to the occident as "Indians" and came in the end to be correctly if vaguely recognized as having affinity to Malaysians.

There followed, after the middle of the nineteenth century, the carefully thought out theories of competent resident amateurs and scholars, of whom S. Percy Smith and Abraham Fornander were the outstanding thinkers in the field of Polynesian origins. Having before them relatively ample linguistic records and being impressed with the native traditions of migration, Smith in New Zealand and Fornander in Hawaii propounded specific theories of origin; Smith pointing to India as the traditional fatherland and Fornander to Arabia. William Churchill, for some time resident in Samoa as U. S. Consul, may be characterized as belonging to this era, for it was on the basis of local traditions combined with linguistic analysis (which remained amateurish, however pompously elaborate), that he distinguished two migrations into western Polynesia and traced his two streams back into Malaysia.

Then it was that there entered the field the first trained ethnographer who took the trouble to gather and utilize all the available data, Roland B. Dixon. He introduced a comparative method which was peculiarly his own and in which he delighted, a method which consisted of systematic classification, analysis, and comparison of data from different localities with the object of determining distributions and derivations. The technique was old in the field of American ethnography, but up to his time it had not been applied in Polynesia. He published the inferences which he derived from this procedure in his volumes on Oceanic mythology[1] and racial history.[2] During more recent years, in which the Bishop Museum's active prosecution of research has led to great increases in the quantity and complexity of data on Polynesia, the Dixonian technique has been applied to Marquesan material culture[3] and Polynesian culture and history in general[4] by several contributors to the present volume. Today, however, I believe all field workers in Polynesia will agree that the Dixonian technique, useful as it has been in clarifying our thinking, has been outmoded by the very extensiveness of the data which now confront us.

It is interesting to note that Dr. Dixon, in the writings on Oceania which appeared late in his life,[5] was again pointing the way to a safer technique in historic ethnography of the Pacific, that he was laying stress on the need for the identification and tracking down of specific concrete phenomena, in contradistinction to the earlier technique of generalizing from masses of facts and of drawing inferences from the weight of accumulated evidence. His own and his pupils' sweeping forays in the fields of inference forced him in his latter days to seek refuge in the concrete and the tangible, and to find security in judicially selected facts and critically appraised considerations. It is this reliance on simple facts and not on generalization which is a contribution of sound building material to the science of ethnography with which

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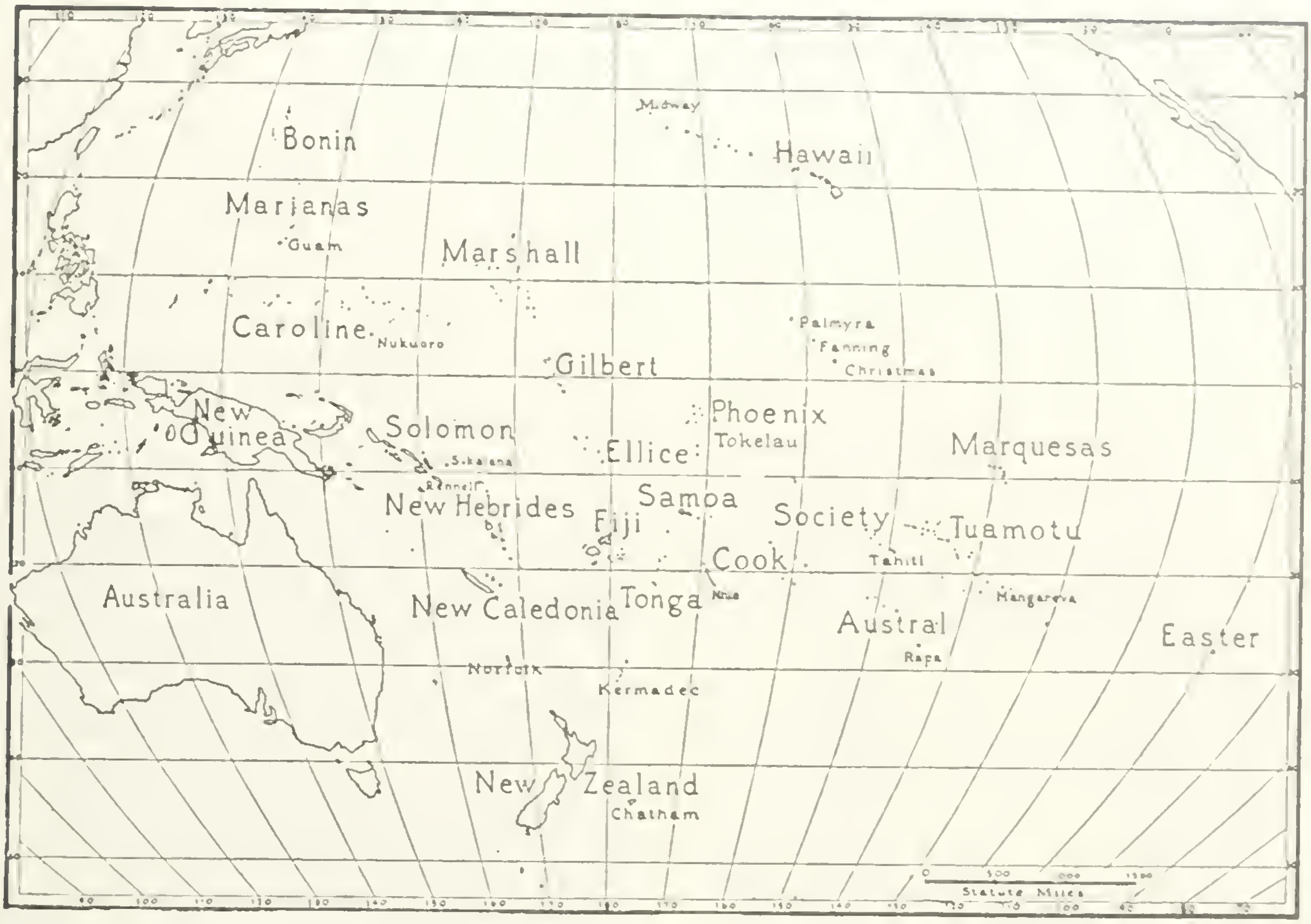
[1] Dixon, 1916.

[2] Dixon, 1923.

[3] Handy, 1923.

[4] Linton, 1923.

[5] Dixon, 1932, 1934.



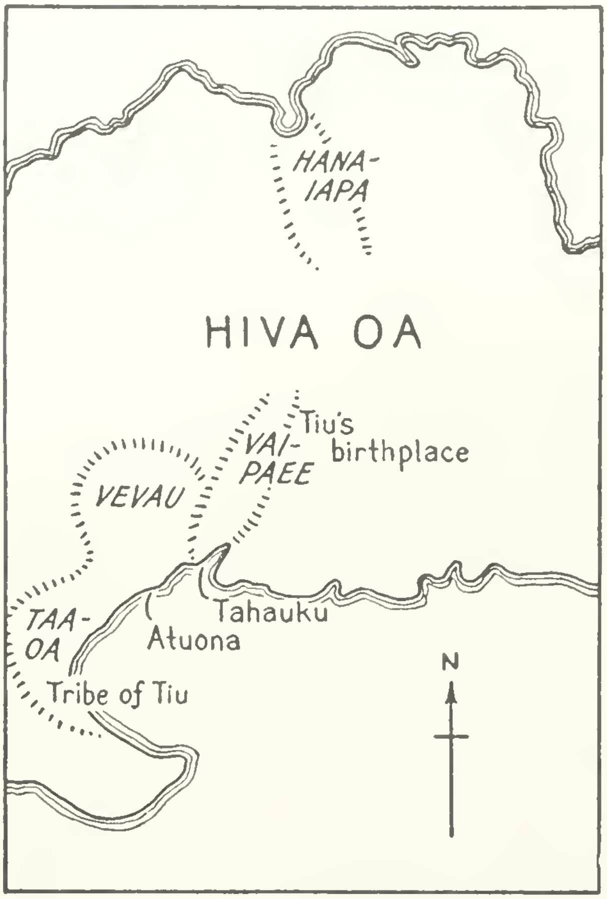
Map 1. Islands of the Pacific.

the name of Roland B. Dixon will ever be remembered as that of an original and vigorous pioneer.

If the considerations based on concrete evidence which are applied to the two petroglyphs described below may be regarded as sound building material, and if they are tangible evidence of the sort that will in the future reveal in historic perspective the internal and external relations of Polynesian culture, then this paper is worthy of the memorial volume to which it is contributed. For we stand, today, on the threshold of a new era in the study of Pacific ethnography, the era toward which Dr. Dixon's later writings pointed the way. Broad generalizations will probably be viewed askance by the next generation of ethnographers: they will be regarded, in the light of fuller information on Oceania and the hinterlands of Malaysia and southern Asia, as illusory, time-wasting, and error-provoking. The practice of drawing inferences from broad classifications and comparisons must give way to that of careful analysis of limited and well-defined phenomena, relationships and sequences. For even the encyclopedic mind of a Dixon had to surrender the ideal of ominscience as it faced the rising tide of factual data which flowed from the Pacific, and it is certain that this rising tide must become ever more complex and ever more unwieldy. In Polynesia we have merely turned over the surface soil of culture in our preliminary surveys, and westward of Polynesia the ground has been scratched in only a few localities. Both institutional and individual field work are destined to become more intensive in immediate objectives, and broader in ultimate scope.

The Tahauku Petroglyphs

Pl. VII, fig. 1 is reproduced from a photograph of one of the most interesting rock carvings found in the Marquesas. Dr. Linton and I were conducted to it soon after we commenced work in the Marquesas in 1920 by our native collaborator, Haapuani Puhetete, who may be seen perched on on the rock in the accompanying plate. Linton studied the site in detail and described it in his



Map 2. Hiva Oa, Marquesas.

Archaeology of the Marquesas Islands.[6] The human figures carved on the sloping face are about 2 feet high. On top of the boulder, not shown in the photograph, are further figures similar to those on the side together with a few "unidentifiable forms."

These figures, which appear to be unique as to form and technique in the Marquesas, would remain an interesting but not highly significant local problem (raising questions such as Linton discusses as to the possibility that they may represent an extinct phase of art), were it not for the fact that there is also a unique and striking legend pertaining to this particular valley. The legend and the petroglyphs, taken together, bring up a much more interesting series of questions bearing on a possibly close connection between the Marquesas and Easter Island.

The great basalt boulder which bears the carvings lies in a small side valley named Tueato which opens into the lower part of the large valley of Vaipaee. The lower Vaipaee Valley is known as Tahauku, a name which very likely was applied originally to the margin of the bay. Tahauku means "Diving Place," and the name presumably refers to the fact that the bay is famous for large marine crayfish which are caught by diving off the rocks along the shore. This valley is today uninhabited, but a legend referring to it was told me in Taaoa Valley to the westward (map 2). Tiu, the progenitor of the tribe of that name which was autochthonous in Taaoa, was born, according to the legend, in upper Vaipaee (which nowadays is carelessly referred to with the lower section as Tahauku). He was born in the form of an egg which fell into the stream and floated seaward till it came to rest in a pool near the sea. From the egg there emerged a disgusting fishlike being who was all covered with sores. The mother who had given birth to the egg that was Tiu summoned her daughter and sent her to find the creature in the pool. The girl approached the pool, chanting a eulogistic incantation and bearing gifts which the mother had provided and which included a loin cloth (the symbol of manhood and of family heritage). The fishlike creature emerged from the pool. The girl, following her mother's instructions, rubbed its sores with scrapings from the outside of a coconut husk and the diseased appearance of its skin disappeared. Then the girl girded Tiu's body with the loin cloth she had brought, and he assumed human form. But he was evidently still grotesque. He walked toward Taaoa, and as he came to the hill overlooking Atuona he sighted the house of his grandfather. Tiu hailed the old man, who came out of his house and saw Tiu standing there on the hill, a figure of immense size with toes turning in and hands clasped tightly and helplessly across his breast. The old man called, "Come hither, my boy, but make yourself a little smaller." So Tiu made himself smaller and came to the house of his grandfather. His grandfather's name was Makemake.[7]

So far as I know, the name Makemake occurs in Polynesian lore only in this story of Tiu and in Easter Island where it is connected with the bird cult peculiar to that island. According to Routledge,[8] "Maké-maké" was one of the two male gods who presided over the bird and egg cult in Easter Island, and it is probable that the semi-human semi-birdlike carvings of Orongo, where the bird cult centered, were representations of one of the bird gods.

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[6] Linton, 1925.

[7] The raconteur of this story did not say it had any connection with the petroglyphs, and it did not occur to me while recording the story, many months after seeing the rock, to ask if the rock had any connection with the story of Tiu. But it may be noted that Linton found the rock to be opposite a typically Marquesan tribal temple and dancing plaza, and this suggests the likelihood of a connection between the carvings and the origin myth of an historic tribe of the region. It must be remembered, however, that Tiu was not stated to be the progenitor of the Tahauku tribe, but of that in Taaoa.

> . . . on the rocks which terminate the settlement of Orongo the most numerous of the carvings is the figure of a man with the head of a bird; it is in a crouching attitude with the hands held up, and is carved at every size and angle according to the surface of the rock. . . . The figure must have represented one of the egg gods, but it seems more probable that each one was a memorial to a bird man; and this presumption is strengthened by the fact that in at least three of the carvings the hand is hiding an egg.[9]

According to Thomson, whose inquiries were made over thirty years prior to those of Mrs. Routledge, these figures represented Meke-Meke.[10] Describing the vicinity of Orongo, Thomson wrote:[11]

> Fishes and turtles appear frequently among these sculptures, but the most common figure is a mythical animal, half human in form, with bowed back and long claw-like legs and arms. According to the natives, this symbol was intended to represent the god 'Meke-Meke,' the great spirit of the sea.[12]

In the Marquesan legend, Tiu's birth in the form of an egg and his subsequent appearance, even after assuming human form, with toes turning in (I wrote "pigeon-toed" when recording the legend in my notebook in 1921) and hands clasped across breast at least raises a suspicion that the tale may be related to an egg and bird cult. Considered in association with his grandfather's name, Makemake, and in connection with the Tangaroa relationship which has been condensed in a footnote for the sake of brevity, the suspicion of a possible Easter Island connection grows stronger. Now let us consider the archaeological evidence. By itself, it also could do no more than justify a suspicion of relationship, but in conjunction with the mythological fragments it appears to imply a probability of historic connections, and those not very ancient, between southern Hivaoa and Easter Island.

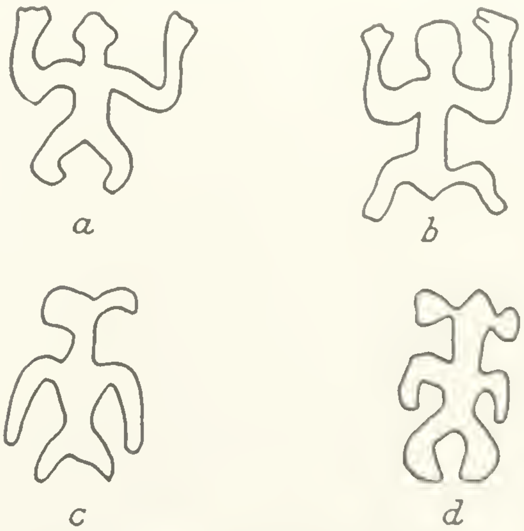

FIG. 1. FIGURES FROM EASTER ISLAND.

Fig. 1 compares the human figures carved on the Tahauku boulder with others which bear considerable resemblance to those typical of the so-called "script" inscribed on wooden tablets in Easter Island. These Easter Island figures are, however, selected from a great variety of characters which for the most part bear no resemblance in form to the Marquesan.

The resemblances in form between the two types of figures, one with arms up and the other with arms or wings down, may very well be no more than coincidences, and if form alone were the basis of comparison they should certainly be regarded as no more than this unless other evidence of probable relationship existed. It is the drawing of the Marquesan figures, strengthened by the resemblances in form, which gives some justification for considering that the hypothesis of a generic relationship between the Marquesan glyphs and the Easter Island selected characters is tenable. The drawing is in double lines, and this style of delineation is peculiar to the Easter Island script, the Tahauku petroglyphs, and a single Tahiti stone carving which has been described and reproduced by Emory.[13] Save for this latter exception (which in form shows only a vague resemblance to the Tahauku and Easter Island figures), the countless petroglyphs which have been observed in the Marquesas, the Society Islands, Hawaii, and elsewhere are typically simple incised drawings; occasionally, they are in low relief, and very rarely intaglio.

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[8] Routledge, 1919, p. 260.

[9] Routledge, 1919, pp. 262–263.

[10] Here as in all other spellings, Mrs. Routledge's orthography is to be trusted rather than that of Paymaster Thomson who erred, throughout his report, in spelling Polynesian words and names. The Polynesian short *a* may easily be confused with an unaccented *e*.

[11] Thomson, 1891, pp. 481–482.

[12] In Polynesia in general it is Tangaroa who is the "great spirit of the sea." In the Marquesas, as Tanaoa, he is lord of ocean and of winds, and his place of birth is given in the legend or myth of Tanaoa as Atuona, where lived Tiu's grandfather. The people of Vevau (the ancient name for Atuona), were descended from Tanaoa and consequently were known as Ati Tanaoa, clan of Tanaoa. Tiu means northeast wind.

Now, turning to Tahiti, we find Ta'aroa called "Lord of the Ocean" (Te-Fatu-moana) in mythology and, as was also the case in the Marquesas, he was venerated by fishermen and propitiated in time of storm at sea. Ta'aroa was symbolized by sacred red feathers and, according to the creation myths of Tahiti, he was self-created in the form of a cosmic egg from which he emerged covered with feathers. Quoting Henry (1928, pp. 336–339):

"Ta'aroa sat in his shell in darkness for millions of years. . . . The shell was like an egg revolving in endless space. . . . But at last Ta'aroa gave his shell a fillip which caused a crack. . . . Then he slipped out and stood upon his shell. . . . Then he swam in the space without land . . .; and then returned . . . within his shell. . . . At length . . . he slipped out of a new one and stood outside upon the old shell. . . . When Ta'aroa shook off his feathers, they became trees, planting clusters and verdure upon the land."

Before discussing the implications of the suggested relationship between the Tahauku story and glyphs and the Easter Island lore and script, there is one additional bit of archaeological evidence that must be included in this effort to array the fragments of this interesting group of parallels in logical order. Linton dug up at Tahauku, in a platform of the temple and dance plaza which was found opposite the carven boulder, a stone slab showing:

> a face below which are two pairs of upward curved lines, probably representing limbs. The eyes are shown by concentric circles, as in the grotesque faces found (elsewhere) as petroglyphs, but the mouth is apparently beaked. (Pl. XV, *C*). This is the only recorded example of the occurrence of a beaked mouth in Marquesan carving, and it is of great interest in view of the prominence of this feature in Maori art and the numerous connecting links in the culture of the two peoples.[14]

Linton's identification of this beaked face would be no more than one more interesting and unique fragment of evidence if it stood alone, but it assumes real importance in the light of the other evidence which we are here discussing. In the first place, the beaked face carved on the Taukuku slab greatly strengthens the probability that the petroglyphs have to do with the story of Tiu—who was born of an egg. And in the second, the beaked face which suggests Maori carving to Linton[15] has an Easter Island counterpart in a stuffed figure covered with tapa cloth which has human legs, arms, and trunk but a bird-like head. The head of this figure (which is in the Peabody Museum, Cambridge, Massachusetts, and which is pictured in pl. X of Professor Dixon's volume on Oceanic mythology)[16] is shaped and painted in a manner which is unquestionably related to the Maori beaked face. It may be claimed, thus, that the hypothesis of an historic relationship between Tahauku and Easter Island is definitely strengthened by the stone slab described by Linton.

Now to revert to the Tahauku petroglyphs. As rock carvings these are unique among the many others which have been found in these islands by Linton. They are peculiar both in the form of the figures and in the mode of the delineation. Nevertheless, the stylizations of the human figures carved on the rock are related to those of human figures as depicted in recent times by the tattoo artists of the Marquesas.[17] Furthermore, the delineation in double lines is typical of that which may be seen in recent wood carving of the islands.[18] The double lines on wood carving are, in fact, simply a primary stage of carving designs in low relief. Both the form of the figures on the Tahauku petroglyphs and the manner in which they are carved serve to identify them with recent tattooing and wood carving. In other words, like the story of Tiu and his grandfather Makemake, the glyphs may be attributed definitely to the ancestors of the present inhabitants of this section of Hivaoa.

The fact that the glyphs are of the same "school" of art as modern or recent tattooing and wood carving argues against any great antiquity for them, for both tattooing and wood carving have changed rapidly even within recent times. The differentiation of Marquesan design from the related but dissimilar schools of art in New Zealand, Central Polynesia, and Hawaii is evidence of rapid change in this as in most other phases of culture. Also, the fact that the figures are so sharply cut on the exposed surface of a basalt boulder is a further argument against great antiquity for, although basalt is a very hard stone, it

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[13] Emory, 1933, pl. 19, A.

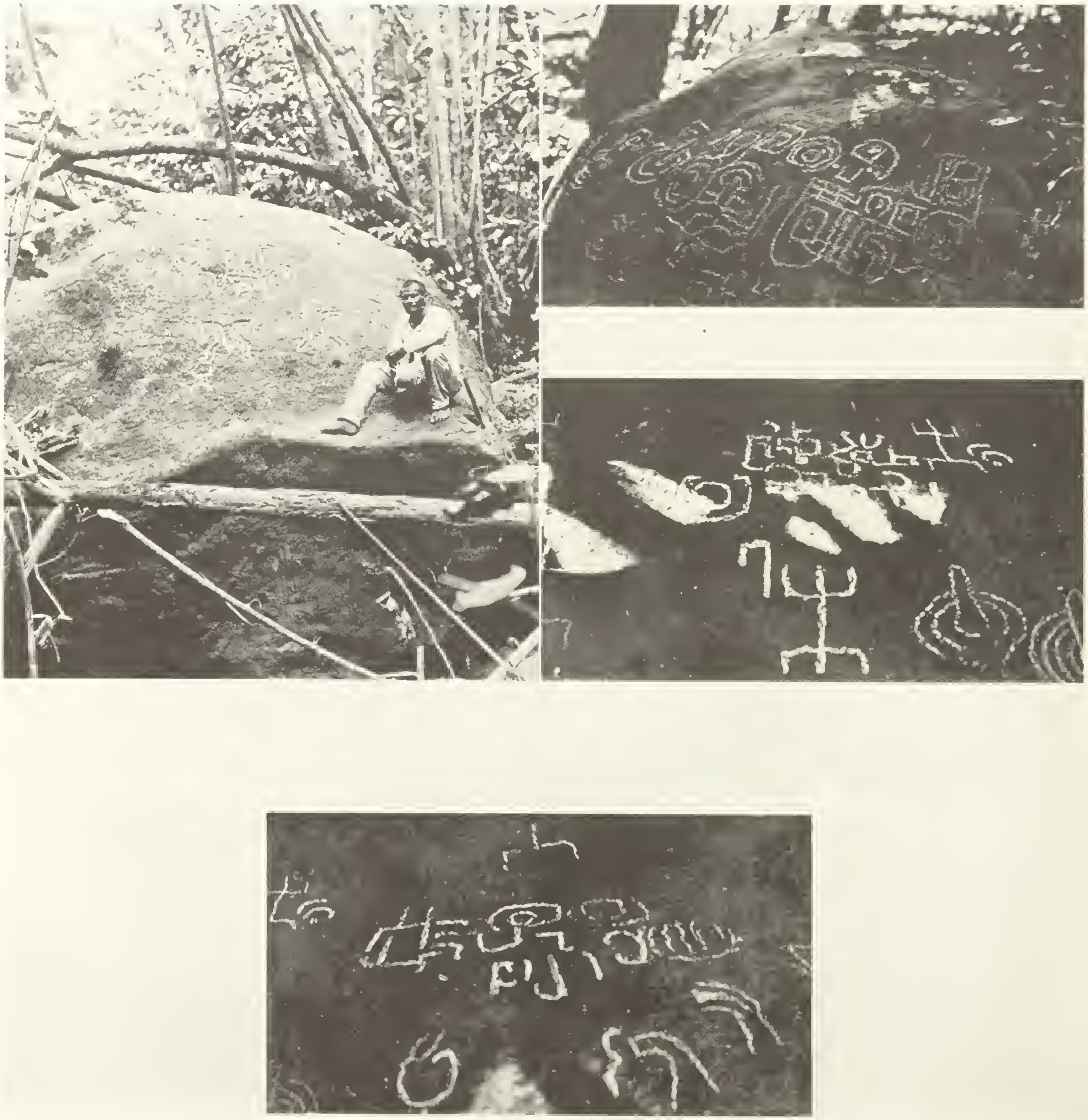
[14] Linton, 1925, p. 99.

[15] The beaked face of Maori carving depicts Manu Kura, the sacred Red Bird of Maori mythology.

[16] Dixon, 1916.

[17] See fig. 3, A, in Handy, 1922.

[18] See pls. LVIII, B, and LXIX, B, in Linton, 1923.



1, The Tahauku petroglyphs; 2, 3, 4, the Hanamapa petroglyphs.

softens and weathers rapidly by chemical action under rain and sun. Nevertheless, the very nature of the designs themselves is evidence that they must possess a relative antiquity for, as semi-naturalistic human figures, they must be identified rather with the old ancestral cult and the earlier, more naturalistic tattooing than with the conventionalized symbolism which has come in very recent times to be characteristic of Marquesan wood carving and tattooing.

We may safely conclude, then, that the glyphs represent an early period of Marquesan naturalistic art and were carved by the ancestors of the historic inhabitants of Tahauku, and that they probably were connected with the myth of Tiu. We must leave the question of historic relationship with Easter Island in the category of definite probability but not of proven fact. The evidence of the myth of Tiu, the glyphs, and the beaked face, when taken together and compared with Easter Island resemblances, is at least deserving of record and consideration. But it is not permissible to make any final statement on the basis of a single consideration of this sort, for the whole question of cultural and historical relations between Easter Island and the Marquesas, and between each of these groups and southern Polynesia in general, requires detailed consideration of myths and genealogies and of every phase of material culture and social and religious mores.

This I may say, however, without fear of committing myself to speculation: As a student of Marquesan culture at first hand, acquainted with Easter Island through literary sources, I have long been impressed by the many parallels in the two cultures—parallels which need not imply direct connection between the islands but which more probably indicate conformities to an old eastern Polynesian pattern. In both carved and tattooed design it was naturalistic forms, which are represented both in the Marquesan glyphs discussed above and in the Easter Island art as a whole, which represented the typical school of art of this era and region, namely, of protohistoric eastern and southeastern Polynesia. These facts, like almost everything else in Easter Island culture and tradition which may be compared with the related Polynesian scheme, would appear emphatically to deny any possibility of relationship between the Easter Island "script" and any writing as ancient as that of Mohenjo-daro.[19] This problem is sufficiently dealt with by authorities who have greater competence than I on the subject of Easter Island, and I mention it here only to point out that the factors described above in connection with the Tahauku glyphs add further weight to the innumerable arguments against d'Hevesy's spectacular theory.

THE HANAIAPA PETROGLYPHS

Almost directly opposite to Vaipaee, in a valley opening on the northern coast of Hivaa, is another great rock which is covered with carvings which are quite different in every way from those of Tahauku. This series was found and photographed by Linton, who describes it in his report on the archaeology of the Marquesas.[20] The inhabitants of Hanaiapa named the rock Hakaiki (chief), and they are reported to hold it very sacred. It stands facing the temple and dance plaza, as is also the case with the petroglyph rock of Tahauku, and the association again probably implies that the tribal sacred place and the inscribed rock had ceremonial and traditional relationships.

The surface of the Hanaiapa rock is inscribed with deeply inscribed glyphs, some of which are shown in pl. VII, figs. 2, 3, 4. No information was vouchsafed by the natives as to the origin of the rock or as to any traditions relating to the carvings.

In 1927–1928, while in Indo-China and India, I had various opportunities to study superficially inscriptions in the script of the Pallawa dynasty of the Coromandel coast of southeast India. This script was carried into Indonesa and Indo-China in the early centuries of the Christian era. While examining the Indian inscriptions, it occurred to me that certain petroglyphs in the Marquesas, those of Hanaiapa in particular, looked more like crudely executed script than like pictographs. In the summer of 1929 I stopped at Leiden in order to show Dr. N. J. Krom the pictures of Marquesan rock carvings which had been published by Linton, by way of testing my notion that some looked like crude characters of a script, possibly Pallawa. Dr. Krom was sufficiently impressed to ask me to send him clear photographs of the Hanaiapa rock. His subsequent observations and conclusions are summed up in the following translation of a paper read by him before the Royal Academy of Amsterdam.[21] After referring to my theory that elements of Hindu culture are present in Polynesia and are presumably derived from the eastward movement of Hindu culture into Indonesia during the first centuries of our era, Krom said:

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[19] This rapprochement has been hypothecated by d'Hevesy, 1932, 1933.

[20] Linton, 1925.

[21] Krom, 1931–1932.

> The discovery of scribblings on rock in the Marquesas in marks resembling Indian letters appears upon first sight to confirm this hypothesis. The first mention of their existence is made by Linson (Linton), (Archaeology of the Marquesas Islands, Bulletin of the Bishop Museum, 23), in 1925, yet the first receipt of good photos last year made further study possible. It appears, however, that the other archaeological remains of this island group present not a single object in any way Hindu, though truly there are other things which are reminiscent of Indonesia, but only of that Indonesia which has remained outside the influence of Hindu culture.
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> The rock incriptions of Haniapa valley on Hivaoa consist for the most part of figures with circles, one panel of quadrangular, and other linear patterns. Between them one sees the marks which resemble letters, but which on the whole are of the same character as the figures, which positively are none of them letters. On the basis of this, one would be inclined to suppose that nowhere are actual letters discernible; yet there stands over against this assumption the fact that when one looks at the "letters" piece by piece, again and again some equivalent in Indian script can be pointed out, and that when a number of them are placed side by side, it is indeed not difficult to read words. The meaning of what then turns up is, however, wholly unintelligible.
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> Further comparison makes it evident that the script wherewith the signs of the Marquesas have the most agreement is not the Pallawa script which the Hindus in the beginning of our era brought to the eastward, but rather old Javanese script, and specifically that of the Madjapahit period, that is to say, of the 14th century. The Madjapahit kingdom extended as far as New Guinea, and that far one can therefore take for granted a knowledge of this script. The distance to the Marquesas is very great, but all that is needed is the assumption that at one time a single Madjapahit subject was driven out beyond the periphery of the empire by a monsoon storm far to the eastward. This assumption allows the possibility of a single short lived contact—not, of course, anything resembling a transfer of culture or of writing—but indeed a contact which could have brought in a knowledge of the esoteric and mysterious power of these symbols from an alien land. The people might then have straightway taken advantage of their magical power, inscribing them along with their own ancient traditional magical symbols on the place of religious ceremonies, for there indeed the stones with the figures are found.
>
> Now, whatever the eventual explanation may be, the speaker provisionally accepts the following:
>
> 1. That the agreement of the signs in question with known letters is too great to be ascribed to mere accident.
> 2. That the prototype of the tokens is not the Pallawa script but rather the Madjapahit script.
> 3. That the manner in which they are placed makes it presumptive that they could not have been intended either as words or to convey any logical meaning, but rather were used, like the other inscribed symbols, for their magical significance.
> 4. That there is not necessarily any connection between these rock inscriptions and the doubtful traces of Hindu influence elsewhere in Polynesia.

I do not wish to capitalize this identification in support of the general theory of Indian-Polynesian cultural relationship which I formulated over ten years ago.[22]

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[22] One fundamental issue ought, however, to be clarified to avoid misunderstanding which might arise as a result of the somewhat different approaches made by archaeology and ethnology to history. When Dr. Krom speaks of "that Indonesia which has remained outside the influence of Hindu culture" he speaks as an archaeologist thinking of Hindu culture in terms of the archaeological zones definitely attributable to the historic Hinduized kingdoms, of epigraphical evidences, etc. For the ethnologist, it is far more difficult to draw lines of demarcation between pre-Hindu (Proto-Malay and Malay) and Hindu in the blended cultures of tribes throughout eastern Indonesia which are, from the point of view of the archaeologist, "outside the influence of Hindu culture." What we know of the processes of cultural diffusion, is in definite contradiction to the assumption that the political limits, or even the commercial bounds (in so far as we know), of the Hinduized Madjapahit empire represented the line at which diffusion of Indian cultural traits stopped short. We are concerned, both in the Hinduized nations and in the less civilized tribes alike, with cultures in which different degrees of blending are present. My tentative theory of Hindu relationship implied the diffusion of blended pre-Indian-with-Indian culture as far as Polynesia. If the later Polynesian migrants departed from Indonesia *without* having incorporated some traits derived from Indian civilization in their ways of living and thinking, then they must have left Indonesian shores far earlier than Dixon or any other close student of Polynesia has imagined. There is no evidence, archaeological or traditional, to give grounds for concluding that even the earliest settlements in Polynesia antedated the Christian era. Let us consider Dixon's views.

Professor Dixon considered that the evidence did allow hypothecation of a modicum of traits derived from India in Polynesia. Concluding his review of Oceanic myths and legends (Dixon, 1916, pp. 304–307), he speaks of the Indonesian (Proto-Malay) as having "wide affiliations which extend, on the one hand, well into south-eastern Asia (i.e. to Assam, Burma, and Indo China), and on the other, to Micronesia, Melanesia, and Polynesia." He inferred two movements of Indonesians eastward. The first took place, he believed, before the Malays populated Indonesia, and moved "from the Asiatic mainland into Indonesia, passed thence, on the one hand, to Micronesia and Hawaii, and on the other, through northern Melanesia to Polynesia. . . . Linguistic and cultural evidences seem

It is true that to explain the presence of Madjapahit script on a rock in the Marquesas, "all that is needed is the assumption that at one time a single Madjapahit subject" was driven far eastward. But the "single Madjapahit subject" is Krom's assumption. More logically, one might assume at least a boat-load of Madjapahit subjects, for a fishing proa would have far less chance of surviving a drift to the Marquesas than a small trader, let us say, which might have been provisioned for a voyage along the coast of New Guinea or to the Philippines. And while indulging in speculation which is as legitimate as, and perhaps more logical than, the suggestion of a "single Madjapahit subject" drifting to the Marquesas, it is reasonable in the light of the evidence discussed in the following paragraph to imagine a Madjapahit craft equipped for a voyage of exploration and colonization. Such voyages were a commonplace in Polynesia; presumably they were not unknown in medieval Indonesia in the era of greatest expansion and of Mohammedan intrusion, namely, immediately prior to and during the Madjapahit period.

In considering this question, what is known of the history of breadfruit in Polynesia may have definite bearing on the issue. Botanists agree that breadfruit was presumably introduced into Polynesia from Malaysia. In Polynesia there exists certain traditional evidence with respect to the dispersal of the tree culture, and botanical considerations relating to the number of varieties in different localities have direct bearing on the probable relative antiquity of cultures in the same localities; given similar conditions of soil and climate, a considerably larger number of distinct varieties implies a longer era of horticulture. Now botanists have discovered that natives of the Marquesas cultivated and distinguished by name over two hundred and fifty varieties of the breadfruit tree, as against fifty odd in the Society Islands, still less in the Cook Islands and in Samoa, and only a single variety in Hawaii. In the latter case it is known that the single breadfruit variety was introduced from the Society Islands. The botanical evidence, then, implies a considerably longer era of cultivation in the Marquesas than elsewhere, and these islands, therefore, have good grounds for claiming the first introduction.

That the Marquesan group was the center of dissemination of the breadfruit in Polynesia appears to be indicated by two pieces of traditional-historical evidence. The Rarotongans say that the breadfruit was introduced to their island from the distant Marquesas, which implies that the tree was at least not common at that time in nearby Tahiti; while the Marquesans have preserved a legend, which I recorded in 1921, describing a voyage in which breadfruit shoots were carried to Rarotonga and planted.[23]

There exists sufficient evidence, then, to justify hypothecation of the Marquesas as the islands where breadfruit was first planted in Polynesia. Now this tree is reproduced not from seed but from cuttings, and these must be carefully wrapped and kept moist during transportation. The legends indicate that this was the method formerly used in transporting the breadfruit, and the fact is attested by innumerable evidences in native horticulture. This implies that at whatever time and by whomsoever the breadfruit was first introduced into Polynesia, it was not by accident but by forethought.

Now, whether six centuries is sufficient time for differentiation of two hundred and fifty varieties of the tree is a matter for botanists and horticulturalists to determine. It is known that differentiation by natural and artificial selection proceeds with great rapidity both in wild and in uncultivated species in Polynesia. My own study

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to indicate a long halt of the migratory stream in eastern Melanesia. . . . Long subsequent, probably, to this first great drift of Indonesian peoples eastward into the Pacific came a second period of movement probably including both Indonesians proper and Malays. . . . Coincident with, or perhaps preceding, the departure of the second main wave of peoples from Indonesia, Hindu elements penetrated to Sumatra and Java. It is as yet difficult to say whether this invasion of Indian culture and peoples was a cause of the emigration of the later Polynesian ancestors, but it seems probable that some of these latter were slightly influenced by Indian contact; and we must also bear in mind the possibility that these Hindu and South Indian elements may have been transmitted later by trade and other factors. In Polynesian mythology, he concludes, "the influence of Indian beliefs was . . . perhaps negligible."

It is no slur on Professor Dixon's scientific ability to hold that his mind was in no sense philosophical and to offer, in proof of the tenet, his treatment of Oceanic mythology. His judgment as to the extent of Indian influence on Polynesian myths was extremely superficial. Any student of the theology of medieval India who will observe carefully the form, structure, and philosophic content of Polynesian mythology will, I feel certain, agree with me that the parallelism is far from negligible.

[23] Gerrit P. Wilder returned to Hawaii after studying breadfruit in Rarotonga in 1931, and at a meeting of the Hawaiian Academy of Science he reported the Rarotonga tradition, not knowing at the time that the Marquesan legend of the sending of the fruit had been recorded.

of Hawaiian horticulture has revealed to me how quickly the old native planters are able to observe and select favorable bud mutations in taro and sweet potatoes. Since Krom has identified 14th century Madjapahit characters on the Hanaiapa petroglyph, it is worth while to inquire if both breadfruit and Madjapahit script might not have entered the Polynesian scene at the same time. If so, then we must think not of "a single Madjapahit subject" but of a Madjapahit ship freighted with breadfruit shoots. The "single short-lived contact" might in this case have been sufficient to explain the introduction into the Marquesas of many traits of Malaysian Indian culture by the shipmaster and his men. Possibly the shipmaster inscribed the rock. The archaeologist will ask why it is, then, that no objects of Madjapahit origin have been found. To this I would reply that a small Madjapahit prao provisioned with water, food, and horticultural freight would not have carried much in the way of such non-perishable articles as pottery and metal, that in the course of a long voyage which may have begun with bartering and ended with drifting before a storm, such articles would largely have been dispensed with, and finally, that there has been a negligible amount of investigation of burials anywhere in the Marquesas. (Linton was only able, with the time and facilities at his disposal, to make an archaeological reconnaissance of the seven islands of the group, to make a few test diggings, and to investigate a few burial caves.)

Dr. Krom observes that "archaeological remains of this island present not a single object in any way Hindu."[24] This conclusion is natural on the basis of a superficial appraisal of the remains and relics described and pictured in Linton's report of his archaeological survey. But let us look into the matter a little more deeply, taking for comparison the phallic cult of the Marquesas and the veneration of the *lingam* which was carried into Indonesia by the Pallawas from South India in the early centuries of our era. In these, there is more than a superficial resemblance and, furthermore, this is by no means an isolated case of parallelism, but an example chosen from many in my notebooks. I choose it for illustration because it is fundamental to the two cultures compared, the Hinduized Indonesian and the Marquesan.

The "images" of deified tribal chiefs and priests which adorned the sacred terrace or shrine of the Marquesan temple were termed *tiki*, and it will be recalled that Dr. Linton found one of these Marquesan temples near the Hanaiapa petroglyph. Both Elsdon Best and I have demonstrated that *tiki* signified phallus, both in mythology and iconography. Specifically, it signified the phallus which symbolized the god Tane (whose name means *male*) in the rôle of procreator of nature and of man. The Marquesan *tiki*, therefore, may be said to correspond both philosophically and ceremonially to the *lingam*.

Now the images which were set up as memorials to chiefs and priests in the Marquesan temples were short columns of wood or stone carved in low relief; they had conventionalized faces, short arms with hands across the belly, and squat legs. The form of the images is remarkably uniform and is unquestionably phallic. Furthermore, it is important to note certain other points. As carvings they are distinctly symbolic and not realistic: they are not, and did not purport to be, portraits of the deceased. In other words, they were not portrayals of the ancestors commemorated, but symbols of Tane (Atea), as cosmic progenitor. Their phallic symbolism is not realized by exaggerated genitalia upon a realistic carving, as it is in some Maori and Indonesian carvings, but is implicit in the entire conventionally decorated column. In all this, the Marquesan figures correspond to the *lingam* carved during Pallawa times in South India, Indonesia and Indo-China. These symbolized Siva, and the phallic column itself was decorated in relief either with the figure of Siva himself or with a conventionalized face representing the deceased ruler to whom, as an incarnation of Siva, the shrine and *lingam* were erected.[25] In Cambodia there grew up the *Devaraja* (King-god) cult in which "The King-god, always represented by a *lingam*, did not appertain to any particular king but embodied the divine fiery essence incarnate in every king."[26] In Champa, the Indian kingdom in Annam which like Cambodia was founded by Pallawa colonizers, the same cult has persisted even into recent times: the deceased monarch is symbolized by a conventionalized face which is carved in low relief on a *lingam*. The cult of the radiant *lingam*, which also was derived from South India in Pallawa times, existed in Middle

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[24] Krom, 1931–1932, p. 201.

[25] In connection with this discussion of the *lingam* in sculpture also see the plates in Coomaraswamy, 1927.

[26] Coomaraswamy, 1927, p. 185.

Java in the 8th century. In fact, Coomaraswamy considers that the Indo-Chinese *Devaraja* cult came through Java.[27]

That this cult lay back of the Marquesan symbolism is not, of course, proven by the evidence which I have adduced. Its proof will require consideration of many historical and cultural factors. But I think I have shown that it may be rash to hold that in the Marquesas "there is not a single object in any way Hindu." My object in bringing forth these somewhat speculative issues in discussing the Hanaiapa petroglyphs is not, as I have already said, to turn Krom's advisedly cautious statements to the account of my own theories, and the present paper is not a suitable place in which to marshal all the evidence from temples, rituals and mythology which supports my general postion. What is intended here is simply to show that the identification made by Krom ought not to be dismissed, as he seems to wish it to be, as of little probable importance to the question of Polynesian cultural origins. While I sympathize with Krom's caution and respect it and while I agree that there is no *necessary* connection between the Hanaiapa inscriptions and other traces of Hindu influence in Polynesia, I believe I have shown that the marks of Hindu culture in Polynesia are by no means doubtful but are, rather, undeniable. I hope later to support this position with a carefully considered array of evidence.

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[27] Coomaraswamy, 1927, p. 201.

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IV

THE GODS OF RENNELL ISLAND

Gordon MacGregor

IN midsummer of 1933 I had the unusual good fortune to spend two weeks on Rennell Island which, with its neighbor, Bellona, lies at the southern extremity of the Solomon group.[1] At the time when I arrived in the island with my cruise companions, the ranking chief of Rennell was conducting a harvest ceremony. Those of us who climbed the face of the raised atoll and walked into the heart of the island, where the chief had his home, were invited to witness the rites and to receive a share of the harvest. Our cordial reception at so fortunate a time made it possible to ask easy and natural questions about the god or gods to whom the harvest was offered, and to progress to broader inquiries about the other gods and religious beliefs of the island.

Perhaps the islanders believed I already knew of their gods from my previous visit to Rotuma, over which the Rennell gods also have domain, or perhaps they desired simply to impress me. Whatever their motive, I was invited on the fourth morning of my stay to attend privately a ceremony to an ancestral spirit and to the great god of the island. It may be that the invitation came to me because, as I later learned, the chief wished me to take his adopted son, the son of a brother who will succeed him, to visit other Polynesian islands, particularly Rotuma, and then bring him back to Rennell. Since the ancestor of the chief had approved this excursion in advance, I was put to no little embarrassment in having to refuse so definitely sanctioned a matter. In any case, the opportunity of attending these other ceremonies was one of the highest value and, though the information obtained was incomplete and unsatisfactory in many respects, I feel that it is well worth presenting as a contribution to our knowledge of Polynesian religion. The observations were made among the last people of a Polynesian culture who, in 1933, remained wholly uncontaminated by European civilization.

The natives of Rennell and Bellona state in their traditions that their first ancestor came from the East, from Uvea (Wallis Island in western Polynesia), if the homeland can be identified with any actual island. Their culture is distinctly Polynesian; their language, when the distinction *ng*[2] is changed to *l*, is obviously a dialect of western Polynesia; and their brown skin, in contrast to the dark brown and black of the Melanesians of the Solomons, indicates that they are members of the Polynesian race. But their extremely curly hair, their extreme dolichocephaly and short stature (particularly among the women), when compared with the physical traits of Samoans and Tongans, indicates that the Rennell Islanders have been subject to Melanesian admixture and to the influence of genetic strains which are not western Polynesian in origin. I suspect from their physical type, their tattooing, and several other cultural traits, that their route of migration (if the Rennell and Bellona people did pass along the western fringe of Polynesia) can be traced further back into eastern central Micronesia, perhaps to the Polynesian substratum there.

THE GODS

When Kui the Ancestor, Kaitu by name, sailed from Uvea to Mungava (Rennell) with his wife and his brother Tonga, he carried a knobbed stick wrapped in tapa. This was Te Maungite Henua, the *tino* (body or earthly resting place) of the god of his homeland. Thus, Angiki e Ha (the Chief above), became the god of Mungava and Mungiki (Bellona). It is not stated whether the other gods, who where members of his family, came with him on the voyage or if it is only a tacit assumption that this was the natural thing to have happened. But it is stated that Tangangoa (Tangaloa, the great god of the Samoans and Tongans) came to Mungava, though his role there is a minor one.

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[1] The opportunity for this visit to an island which has very few contacts with the outside world came to me, as a member of the staff of the B. P. Bishop Museum in Honolulu, through the kindness of Mr. Templeton Crocker of San Francisco. As a guest of Mr. Crocker on board his yacht *Zaca*, I was able to spend the two weeks from June 25th to July 8th, 1933, on Rennell Island. The field notes which I made at that time provide the original material which is presented in this paper, and I am indebted to the Bishop Museum for its generous permission to make use of the material in this way.

[2] Pronounced ŋg at Rennell, ŋ at Bellona.

Angiki e Ha is the supreme god of Rennell and Bellona and his domain is believed to extend over Uvea and Rotuma. The belief in his rule over islands far distant and unknown is easy to understand in the light of the tradition of their ancestor's origin and voyage. Kui left Uvea after he had been instructed by a spirit (Aitu) in a dream to seek a new land. He traveled to Ngotuma (Rotuma), Tikopia, Anuta (Cherry Island), Hutuna,[3] Henua Tai (unidentified), Boungo (San Cristobal—known to Solomon Islanders as Bouro), and thence to Mungava (Rennell) and Mungiki (Bellona). The inclusion of Rotuma within the domain of their god suggests a closer contact and a possible long sojourn there. J. C. Barley[4] learned that Angiki e Ha is also god of unknown places named Hiva, Tamasua, Utainiu, and Nangi, which he reaches, as he does Uvea and Rotuma, by traveling down the arc of the sky to the earth.

Angiki e Ha, and sometimes Ta Unga, are the names by which the god is addressed or referred to when it is necessary to speak of him. But there are circumlocutions to avoid use of his personal name, Te Tonusanga—spoken only in a whisper and in trepidation lest he or someone else should hear. So great is their fear of speaking his name, that my informant muttered prayers for forgiveness before uttering it and only revealed the secret on the somewhat neutral ground of our ship. Their fear is based on awe of the most sacred being in their universe and the actual fount of sacredness. Angiki e Ha is a god of great wrath. Thunder-and-lightning are signs of his displeasure and at each great thunder-clap of local tropical storms, every native from one end of the island to the other mumbles a prayer for protection lest the thunder fall and destroy him.

Angiki e Ha is an *atua* (god) and the head of a divine family. With him are his wife; his eldest son, Tafaki Ngangi; Te Angaitaku, a second son; Sau, a third son; Te Fafine Tautai, sister of Angiki e Ha; and a daughter whose name was forgotten by the informant, but who had been thrown out of the sky by Te Aitu Tabu, the grandson of Angiki e Ha, because she made people sick. Any particular powers or prerogatives of these five *atua* were not described. Only for Tafaki Ngangi alone of this group of Angiki e Ha's family is there a coconut shell spoon with which the chiefs ceremonially partake of food offered to the gods.

The second great god of Rennell is Te Aitu Tabu, the grandson of Angiki e Ha. Concerning Te Aitu Tabu's birth, it is said that although he was the creation of Angiki e Ha's wife, the god was too sacred to have a son directly by a woman. Te Aitu Tabu came into being in the following miraculous manner.

The wife of Angiki e Ha was preparing turmeric in a large wooden bowl in the common Polynesian fashion. The bowl was covered with leaves while the mixture was left to separate into the frothy liquid which forms on top and is cooked as food, and the residue that goes to the bottom and is used in a body oil. Peering to see the state of her turmeric, the wife of Angiki e Ha discovered the head of a child in the bowl. She replaced the leaves and waited. Inspecting her bowl again she found a body joined to the head. Later two arms had grown, and finally two legs had formed, and at the last inspection a fully developed child, deep red from the turmeric, stepped out and stood before her. From this the god has undoubtedly received his personal taboo name, Te Tupui Te Nenga. Angiki e Ha appeared to view this newly created child of the turmeric and adopted him as his grandchild. Angiki e Ha is a gigantic figure, said by some natives, trying to describe him to Europeans, to be ten fathoms in girth. His grandson grew to gigantic stature and girth too, greater than that of any man "but not so great as his grandfather."

Te Aitu Tabu has his family of twelve sons, of whose names only Tinatonu, Tuhai te Maungi (god of Sau e ha), Hui Matangi (or Aitu Eva), and Tonusia were learned. These twelve gods were described as *aitu*, spirits, in contrast to *atua*, gods. The name Te Aitu Tabu would indicate that he was an *aitu*, too, but it was definitely stated that he was one of the two chief *atua* of the people.

The distinction between *atua*, gods, and *aitu*, supernatural spirits, is not clear in many Polynesian islands and the two terms may be used in opposite senses in adjacent islands. At Rennell both words are used in reference to Te Aitu

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[3] A common Polynesian place name that might signify either Fetuna Loa in the Swallow Islands, or Futuna (Hoorn Islands) although this would have been reached before Rotuma.

[4] J. C. Barley, British Solomon Island Reports (unpublished).

Tabu, and I found the concept that both classes of supernatural beings live in the sky.

Tangangoa, the Tangaloa of the Polynesians, although an *atua*, is not a god in the true sense, nor does the little that was learned about him reveal him to be the Melanesian culture hero, Tangaloa. However, attributes ascribed to him suggest the latter figure. At Rennell he is cannibalistic and mischievous, putting lice in men's hair and disturbing their gardens. Formerly, he made his abode in the sea, in rocks, and in trees, but the *aitu* to whom the island belongs was the representative of Tangangoa. One *aitu* caught him as he traveled "over the sky like fire" and placed him in the face of a cliff—a spot called Toho—in Tuahenua, the north side of the island. Some say it was done by Kui himself. The natives feel no awe or reverence for Tangangoa, and as they talk of him they laugh heartily at his pranks. They feel he has been safely put away and that he no longer has any influence.

The influence of the gods pervades the entire life of the Rennell Islanders and controls all their affairs. Assistance in projected plans of work and voyages, intercession in trouble, and advice under unusual circumstances are sought from the gods themselves or from ancestral spirits. No fishing expedition is started and no catch is eaten, no planting is undertaken and no harvest distributed, no house or canoe is built, and no great gift is made without observing preliminary rites and prayers. Any man may supplicate the *aitu*, his ancestral spirits, but it is the chiefs who intercede between the gods and the people and who are the mouthpieces through which the gods speak. It is through the chief's ability to bring the gods into their seats on the marae or into their god sticks, and to bring the ancestral spirits into his own body, that he holds power and prestige among his people.

The position of chief is hereditary, passing theoretically to the oldest son, but in practice it goes to the one who exhibits power to bring the god or spirit into his body during a state of trance or self-induced hypnosis. It is because of the exhibition of this power that Taupongi, although a seventh son, is chief of Te Ngano, the eastern and leading district of the island.

It was in the house of Taupongi, chief of Te Ngano, that I was able to see how extensively the gods participate in the lives of the people and to observe the priestly function of the chief in his community.

The Offering of Food to the Gods

At the harvesting of any large quantity of food, such as yams or taro, the baskets of produce are brought from the family gardens in the district to the house of the chief. The food is piled for offering to the gods and ancestors on the marae, *ngoto mangae*, a cleared space before the house.

The ceremonies and dancing at the harvest offering held during our stay commenced at sunset, by the drummer who, resting his crescent-shaped sounding board, *papa*, against a short peg in the center of the marae, beat a rapid tattoo and commenced to sing. Slowly the men came striding around him and took up the song.

With the informality and irregularity that accompanies most Polynesian ceremonies, all the men did not enter the dancing until three or four dances and songs had been completed. Each dance began with long, slow strides until the drummer, increasing his beat, led the dancers into faster and faster leaps until, with a great shout, they jumped into the air at the end of the song. The dance was repeated that night under a full moon, and again just after daybreak.

During this morning dance, the chief remained in his house seated on a new mat placed over two freshly cut coconut fronds. Before his house he had placed fronds and a mat, and at the west side of the marae he laid a board covered with a mat, and beside this more fronds and a finely woven mat over them. These mats were the seats of the visiting gods and the ancestral spirits.

At the close of the dance, the chief took his place on the mat-covered board and intoned a long invocation calling the god to his seat of honor before the house. Following this, the chief stood with his ceremonial spear in his hand and addressed the god on his mat seat and then, separating a number of yams from the pile, he spoke over them. He signalled three headmen to put them into baskets and set them aside. The remainder of the yams were divided into piles and set in line before the seat spread at the side of the marae. Standing before his own mat, the chief spoke and then led the men in a dance. In this, the dancers maintained the very slow step with which they had only begun the previous dancing.

Following this, another address to the gods was given before the yams and the seat at the side of the marae, before the yams and the seat at the house, and finally, before two baskets of yams placed at the opposite end of the marae.

The dancers closed the ceremony by forming a line across the marae, moving in advancing and retreating steps towards the seat of the god with gestures of bowing. This was explained as the process of conducting the god from the marae into the house from which he was supposed to depart. The dance was climaxed by the men slapping the roof of the house in unison. The dance was followed by a short speech from the chief.

The yams were carried by each man who had received a basket to the women, behind the chief's house, where they had remained during the entire ceremony. Young men had already built a great fire in the communal cooking pit to heat the rocks and here, during the day, the yams were roasted.

In the early evening, before the chief's household ate, the cooked yams for the evening meal were given to the chief, who placed them on the sacred mat spread before the middle post on the front side of the house. He offered a prayer and then, with a ceremonial shell spoon, he scooped out and ate a piece from each of four yams. Thus, he partook of the food on behalf of the god or spirit to whom it had been offered. The basket of yams was then passed to his household to eat.

The Invocation of an Ancestral Spirit

The invocation of an ancestral spirit of Taupongi was preceded by an announcement to his ancestor, made before the ceremonial mat spread in his house. From a little basket of ceremonial paraphernalia beside him, he produced a cake of dried charcoal and oil wrapped in a piece of tapa. Breaking off a piece of the cake, he ground it in a coconut shell cup, using the head of a short black, pin-head stick[5] as a pestle.

Taupongi led us to the canoes, carrying the cup and sticks and a small mat in a basket, and with his ceremonial and chiefly staffs over his shoulder. His ceremonial spear was erected on the deck of the outrigger as a sign of our tabu mission, and bundles of yams and coconuts were loaded on. On our trip down the landlocked lagoon we left the coconuts hanging from the branch of a tree which extended out over the water, for they were to be used later on at the house of an *atua* and were not to be exposed and offered at the house of the ancestral spirit.

Our approach from the landing to this god house or *haitunga* was made in single file. The chief led the way and was followed by his adopted son, myself, and the four or five natives who accompanied us. The god house, named Te Nganguenga, was built like the dwelling houses of the island: it was a rectangular frame with a gable roof and eaves which were only a foot or two from the ground. Before the house was a little cleared space, a marae, which had a short upright coral slab at each side. The one on the east was called Kainganga, and the one on the west, Tuanganga. Another was at the west end of the house. The interior of the house revealed arched rafters and digging paddles, *sua*, which were set with their round blades under the purlin and their handles meeting under the ridge-pole.

As soon as the men had deposited the yams beside the marae, they briskly pulled all the weeds from the grassy area. Meanwhile, the chief entered the house, spread his small ceremonial mat under the eaves of the front side, laid his long ceremonial spear across it, and then came out again. He seated himself on his mat at the west edge of the marae near the corner of the house and then dropped his head and remained silent. The men knelt beside and behind him and began calling the ancestral spirit in tones which were at first quiet but soon became more rapid and excited. Great beads of sweat broke out on the chief's neck. His son on one side and a man on the other put their arms across his back as he began to slump. The calling became louder and sharper; as the men grew more tense and alarmed, Te keta, the son, spoke to his father and wiped his face with tapa. The calling grew faster, until suddenly the chief fell back in a complete trance, into the arms of those beside him. Tupui, the ancestral spirit who had descended to his seat in the house, now entered the head and stomach of Taupongi. The spirit came "like a hot wind," and Taupongi could no longer see.

Great alarm was apparent as Te keta called to his father and rubbed his hands. It was now for him and his companions to get the spirit back to the house and restore the chief. All the men excitedly pleaded with the spirit to return to his seat where they offered to feed him. A strip of tapa was tied around the chief's abdomen, and a man on each side tugged at the ends to squeeze out the spirit. They worked with great energy squeezing and rubbing his stomach until the chief was revived. He immediately retired into the bush to urinate—"to clean the stomach of the spirit."

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[5] Every household had numbers of such sticks, said to be "tabu" sticks. We saw them used to knock through the eyes of coconuts with their points, and for tapping off the top of coconut shell with the sharp rimmed heads. Their only tabu nature discerned was their association with the sacred coconuts which are tabu.

Meanwhile one of the men placed the yams in little freshly-made tray baskets and covered them with a tapa sheet. Crossing the marae, and leaning on his chief's stick, he addressed the god house, pausing intermittently while the others responded, "Aue O."

Then he dumped the yams before the house, on the *tabu mangae*, removing a few broken ones and placing four at the opposite end of the marae. A ceremonial mat was spread over two green coconut fronds laid on the west of the marae, as in the harvest offering ceremony. Two digging paddles were brought from the house; one was placed erect before the slab at the end of the god house and the other laid before it.

The chief, in the meantime, had returned to his seat and was sitting in silence while his son, in great agitation, talked rapidly to him. The chief blackened his face with mixed charcoal and, sitting before the slab and digging paddles, with his hand resting on the stone, he muttered requests for advice to his ancestor. At the end, his son wiped off the charcoal and Taupongi, now standing on the mat where he had been possessed and leaning on his chiefly stick, intoned a lengthy address. To this the others again replied, "Aue," at intervals. Other addresses to the visiting spirit then followed, the next being made from the slab at the end of the house. To this there were many replies which came from one of the two men sitting inside the house. The chief then moved from the slab to the western front corner of the house, speaking in loud authoritative tones as he did so. Walking over to the pile of yams and touching them with the tip of his ceremonial spear, he continued his speech directly to the spirit within the house.

Distributing the yams, he placed three before the house, several small trays before the ceremonial mat on the west edge of the marae, three trays before me and the two minor chiefs who had come out of the house, and little piles before the slabs on the east and west sides of the marae. The chief spoke over each group of yams and over the four which had earlier been placed at the north end of the marae. After squatting on his own mat, and after speaking from a standing position in the center of the marae, he stuck his chiefly staff and ceremonial spear in the ground and entered the house to address his final words to his ancestor. The digging paddle which was lying before the coral slab was then set upright beside the other. The yams were gathered into large baskets and the party withdrew, again in single file but in reverse order of arrival, with the chief leaving last.

The Invocation of a God

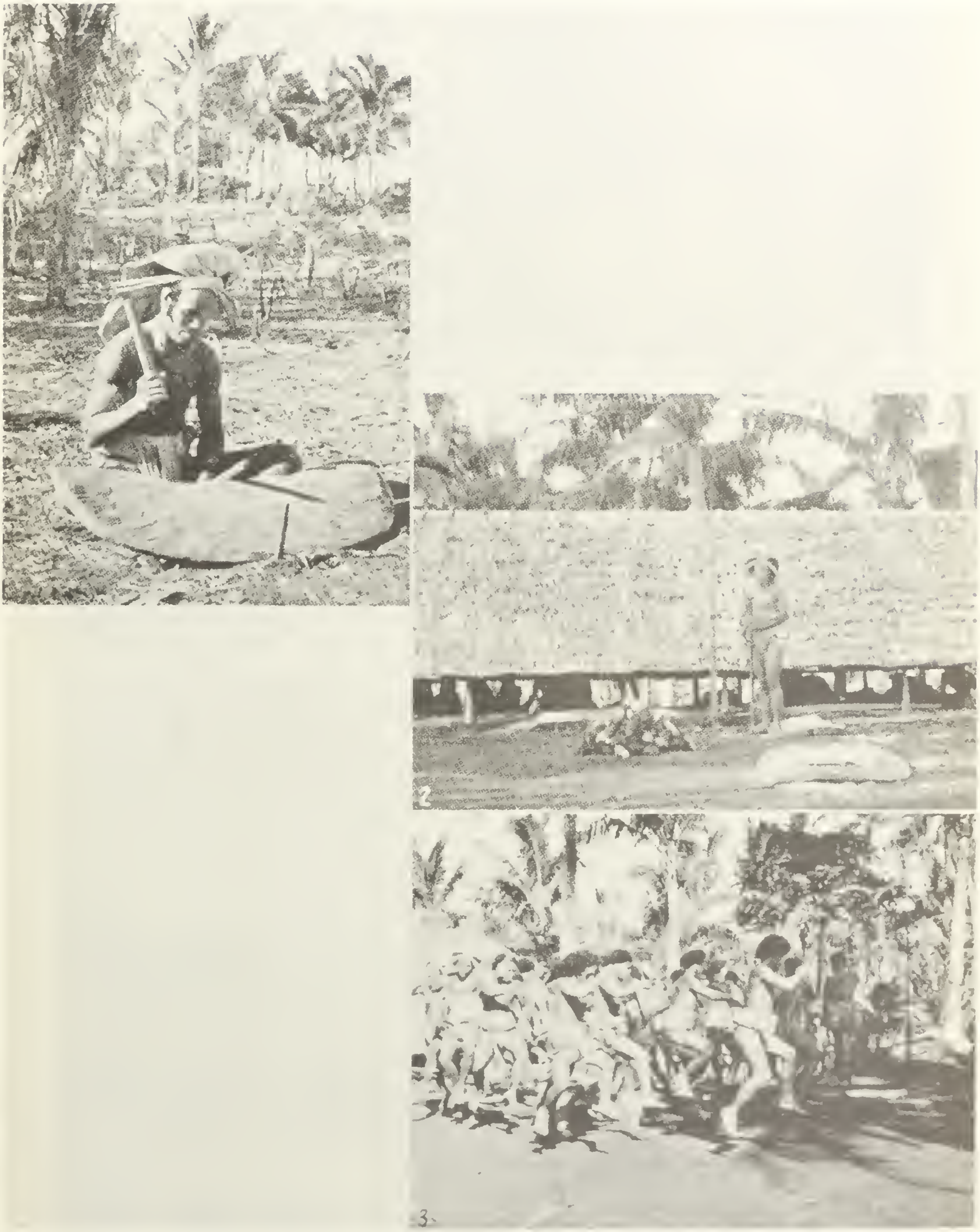
The god house, which we next visited, was also close to the shore but was hidden from view from the lake. It stood in a grove of coconut and papaia trees but had no cleared marae before it. This was the god house or sanctuary of the greatest of Rennell gods, Angiki e Ha, and it housed his god stick. The house is called Mangama Uvea.

The chief and his son took me into the house, while the others remained outside to husk and clean the coconuts which had been cached during the visit to the first god house but which had been picked up thereafter. Within the house, digging paddles were set up in much the same way as in the other, but they were slipped in a rack formed by the purlin and a strip which ran parallel to it under the rafters. The god stick supported in the center of the rack was a post, approximately four and a half feet long and four inches thick, which had a knob at each end. A strip of tapa was tied around the neck of the stick and was draped to fall down and over the rack like a cloak. The post itself had no carved or painted decoration, but the head was covered with dried yellow turmeric.

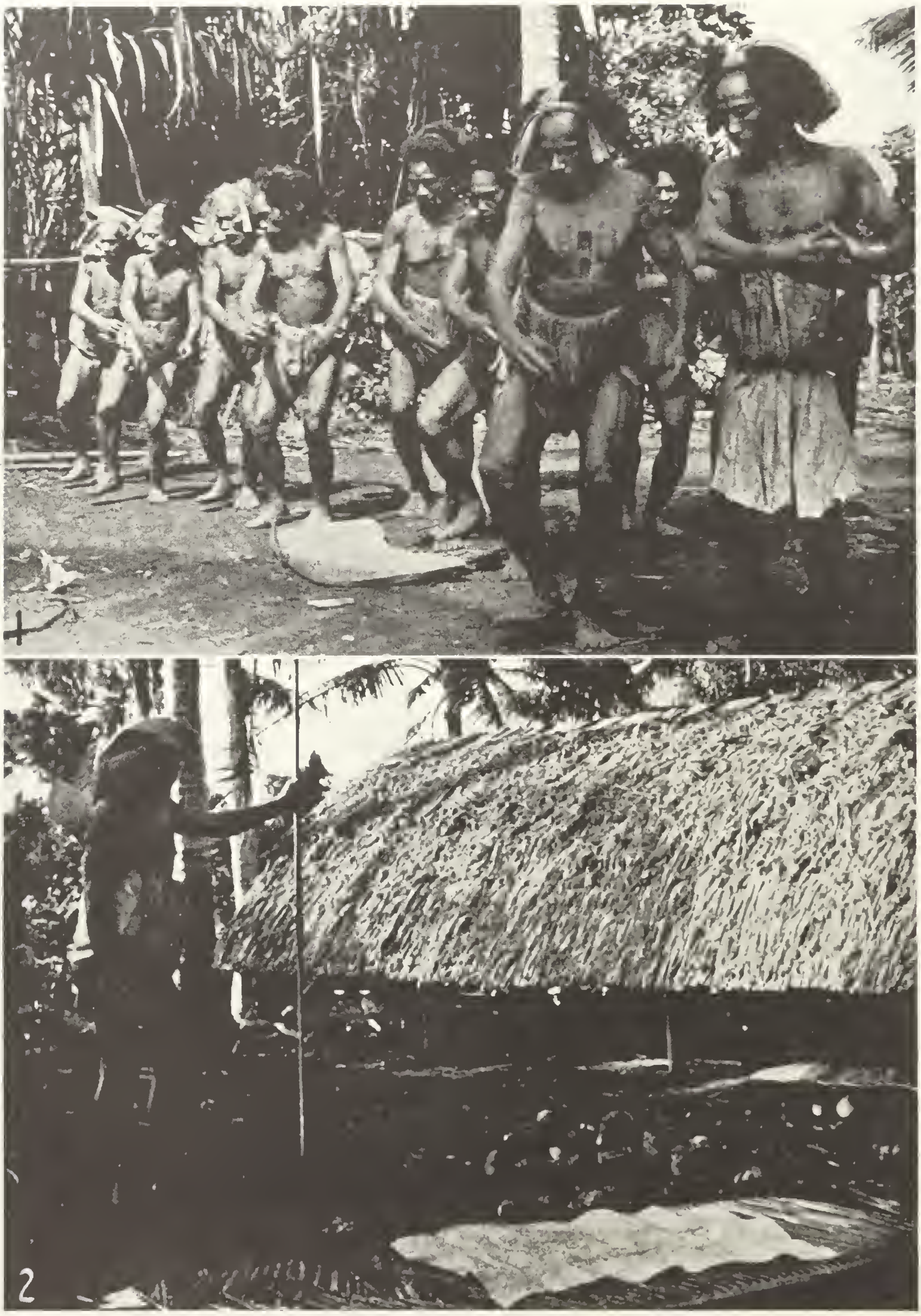
The chief addressed the god stick and then took it down and leaned it against the house shelf. He spoke to the stick again and took from the shelf a coconut shell cup and some turmeric which was wrapped in a piece of tapa. A little of the turmeric was poured into the cup, and the chief held it out in order that his son might squeeze in a little oil from freshly grated coconut meat. The chief spoke three times to the stick, and then rubbed the mixed turmeric and oil first over its head and then over its body and foot. He replaced the tapa "cloak" which had been removed and put the stick back in the rack.

Two coconut fronds were laid on the floor, and a mat and a folded tapa laid upon them. The husked coconuts were brought in and laid beneath the god stick, and the ceremonial spear was placed across them.

During these preparations the chief had blackened his face with charcoal again, and as they



Rennell Island, Harvest Ceremony. 1, the drummer begins the dance; 2, the marae prepared for the Harvest Ceremony; 3, the Harvest Ceremony dance in full swing.



RENNELL ISLAND, HARVEST CEREMONY. 1, THE CLOSING DANCE OF THE ANNUAL HARVEST CEREMONY, BELLONA ISLAND; 2, OFFERING OF HARVEST FRUITS TO THE GODS.

were completed he sat facing the mat. His chiefly staff was before him, and its head rested on his right shoulder. He spoke to the spirit of the god, Angiki e Ha, who had been summoned by the annointing of his god stick, and seated himself on the mat with the offering of coconuts before him. After this address the visiting god passed into his stick or earthly body. The chief wiped his face, and a second man seated himself on the ceremonial mat and tapa. As the second individual spoke, the chief intermittently answered, "Aue," in affirmation of the words of the speaker.

The speaker then moved aside. The ceremonial spear was removed from the coconuts, and these were placed in line before the seat. After a long intonation of offering, two coconuts with their eyes knocked out were presented to me, and all but four of the remainder were distributed among the other men present. The four remaining nuts were placed on the mat and, after further intonations, were husked. The chief took a short drink from three of them and then passed them among the others for each to sip.

The party soon left the god house in quite informal fashion and disbanded after reaching the chief's settlement. The chief, however, had still further rites to perform within his own house. Coconut leaves and fresh mats were spread again and coconuts were placed upon them. With a lighted torch in his left hand, and with his chiefly stick resting on his right shoulder, he addressed the god seat. After this, he struck out the torch with a coconut leaf fan and moved to the other end of the mat, rubbing charcoal over his face and hair. Again he addressed the god seat, then, wiping off the charcoal, he sat in the middle of the mat and talked in a barely audible voice, bending over the coconuts as he spoke. At the end, he packed away his ceremonial equipment and brought the coconuts to the living end of his long house. There they were distributed to the household as part of the evening meal.

V

THE RACIAL ELEMENTS OF MELANESIA

W. W. Howells

FOR purposes of race, Melanesia can be construed only in the literal sense, as the domain of the "Oceanic Negroes," or the dark people of the Pacific. This necessitates, however, some qualification. In the first place Melanesia is not generally taken to include Australia, for somatological as well as cultural reasons; the native Australian appears to constitute a separate racial stock rather than a division of the general Negro stem, in spite of his deep pigmentation. In the second place the limits of Melanesia on the remaining three sides, west, north, and east, are difficult to determine precisely, mixture and infiltration having taken place in all directions. For example, there are obvious substrata in the Timor Archipelago of Melanesian, i.e. Negroid, physical type, while at the eastern extremity, in Fiji, the population is hybrid but dominantly Polynesian in race, though Melanesian in language and mainly so in culture. Finally, the adjective "Melanesian" in past usage does not signify the same thing when applied to geography, culture, language, and race.

In this description, therefore, Melanesia signifies the geographic area including all the islands dominated by dark-skinned peoples except Australia. When applied to language, however, the term is restricted to the Malayo-Polynesian speech family of the coast of New Guinea and the eastern groups, these people being "Melanesian-speaking" in contrast to the numerous and largely unrelated "non-Melanesian" tongues of the interior of New Guinea and other large islands.

The area under discussion, then, comprises New Guinea with its eastern archipelagoes, including the Bismarck chain, the Solomon Islands, the Santa Cruz, Banks, and New Hebrides groups, New Caledonia and the Loyalty Islands and Fiji, although Polynesian blood in the last two obscures the particular Melanesian element involved. Between or within the above groups there are Polynesian or Micronesian "outliers"; in fact it is almost the rule that small islands, unless adjacent to large ones, have been thus pirated by extra-Melanesian peoples.

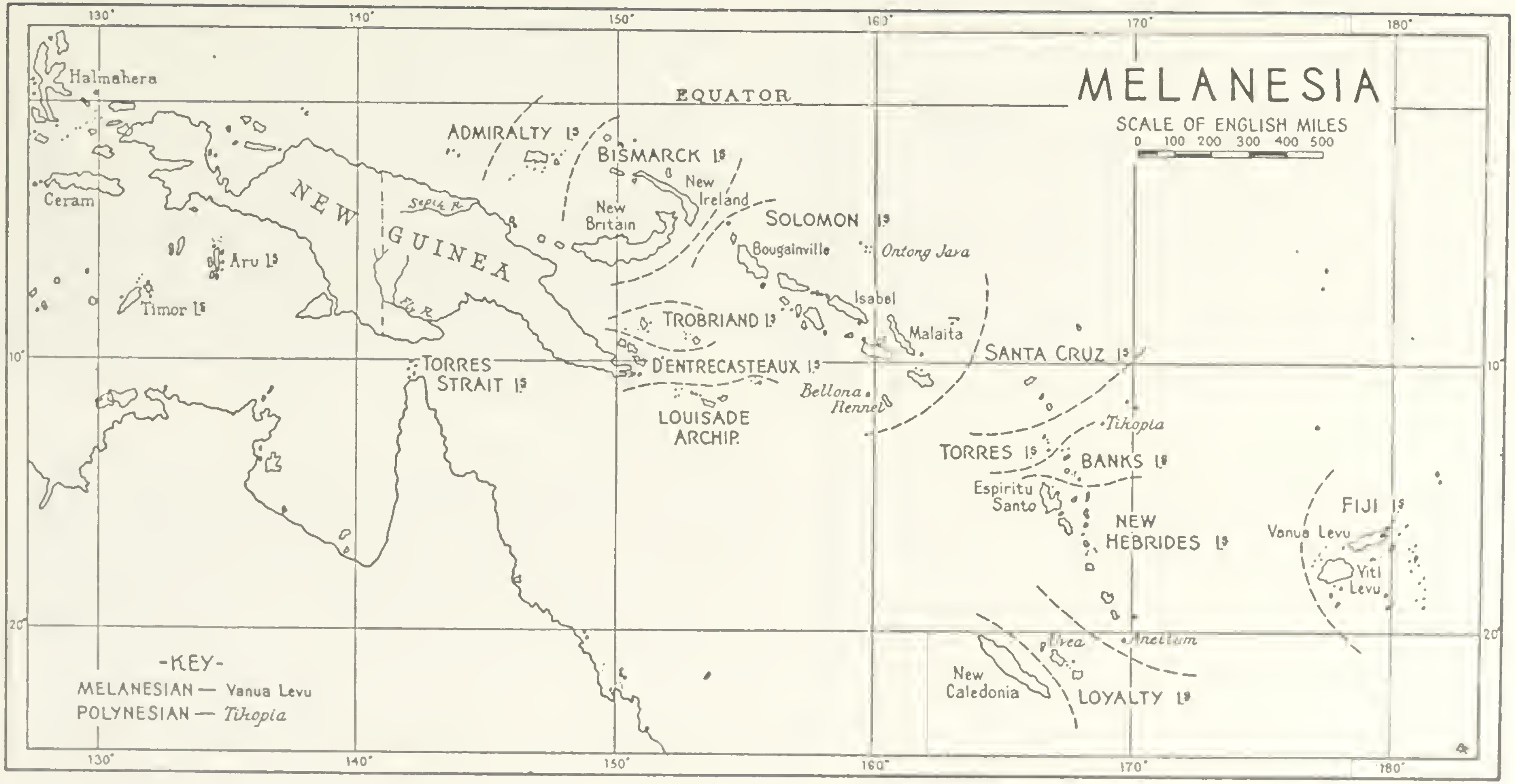
GEOGRAPHY AND PHYSICAL TYPE

There is visible a slight degree of relationship between the geography of Melanesia as a whole and the arrangement of recognizable types. The principal movement of peoples has naturally been coastwise, and the coastal traffic lane runs through the axis of Melanesia lengthwise, along the shores of New Guinea and of the Solomons, Santa Cruz, and New Hebrides. Throughout this area there exists considerable heterogeneity in physical type. On the other hand, island interiors are generally refuge areas, especially in New Guinea, but also in New Britain and the Solomons and New Hebrides. Besides these coastal and refuge areas there are two regions which may be called marginal, these being the northern Bismarck Archipelago and New Caledonia. In contrast to the coastal areas with their general heterogeneity and the lack of distinct physical groups, the types in the refuge and the marginal areas appear to be better marked and more homogeneous within themselves.

MATERIAL

Melanesia is contrasted with Polynesia in its greater variety of racial types, and in the relatively small amount of investigation which has been carried on, due largely to the inaccessibility of much of the area. Nor are the available data impressive: much of the information rests on small handfuls of subjects collected in random areas by untrained observers using unspecified techniques. New Guinea is the poorest in good reports, particularly in view of its size and importance, while New Caledonia and the New Hebrides have been the subjects of the best work.

The ground-plan of racial types is, therefore, far from complete, and the scope of a review based upon the available anthropometric data must be limited to defining those types which appear and recounting their distribution, while the interpretation of the material must be aided by information which is not anthropometric in character. The following description will deal first with the in-



Map 3. Melanesia.

terior and peripheral areas as already defined, and then with the coastal peoples from east to west.[1]

The Central Pigmies

In the mountains of the interior of Dutch New Guinea there are people who appear to be basically of Negrito stock. Records have been made of several groups,[2] all on the southern slopes of the central watershed. The average male stature is 150 centimeters or less. The cephalic index is 80 to 83, the head measuring about 177 by 144 millimeters. The face is narrow and very short, being mesoprosopic, and the nose is mesorrhine. This last character, together with their general appearance, differentiates them somewhat from such Negrito groups as are found in the Philippine and Andaman Islands, so that their purity as Negritos is doubtful.[3]

North of the watershed, in mountains nearer the coast, live tribes which are typically somewhat like the first group. Those reported on include the Kai of the Huon Peninsula,[4] the people of the Torricelli Mountains, inland from Aitape,[5] and the people of the upper Swarts River Valley.[6] They are taller than the central pigmies, though still very short, and have longer heads, with a cephalic index of about 78. The face is wider, though short, and the nose is distinctly more platyrrhine. It is impossible to tell without better material whether these people are actually related to one another racially, since they are widely separated, and since each resembles somewhat the coast tribes in its own vicinity, differing mainly by virtue of smaller size both of stature and of the head. The explanation is probably that these groups, near the coast, are of the same pigmy stock but have mixed more with the coast tribes, so that on the average they are larger than the central pigmies. A large percentage of individuals of the Kai, on the other hand, are very short and of Negrito appearance,[7] although the average includes men who are the product of mixture with coast tribes.

The type of these northern inland people may be distantly related to that of the Baining[8] of the southern half of the Gazelle Peninsula, at the north end of New Britain. These are refugee people as well; tradition among the people of the northern portion, who have pushed them inland, speaks of them as slaves. The Baining are very short (153–159 centimeters); they are high meso- to brachycephalic and very platyrrhine (index 97) and have a short face. Physically identical with them are the Tumuip,[9] a group using a different language and located just south of the isthmus of the Gazelle Peninsula. The Baining are resembled to a considerable extent by the Kai of New Guinea, although the latter are not so round-headed or platyrrhine; furthermore, the Kai inhabit that region of New Guinea nearest to New Britain, and in one place apparently extend to the coast of the Huon Peninsula. Differences between the Baining and the central pigmies may possibly be due to admixture in the Baining, as is probable in the case of the Kai.

The To People

In the northeast corner of the Gazelle Peninsula live the "To people"[9] who represent a distinct type very different from the Baining, and who are believed[10] to have invaded the region from the adjacent shores of New Ireland. The same physical type may be found in the Duke of York Islands near the Gazelle Peninsula, in southwest New Ireland, in the Anir Islands and in New Hanover.[11] New Ireland seems thus to be the center for the type. Although represented in the main by crania, it appears to be of fair stature, with a larger head than elsewhere in Melanesia. The head index is low, the face is very broad, and the nose is strongly platyrrhine.

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[1] Dixon's analysis of Melanesia (1923), based on the distribution of pre-defined cranial types, is so complete that this parallel description can only be excused through the difference in method.

[2] Wollaston, 1912; van den Broek, 1923.

[3] It has been suggested (Schlaginhaufen, 1916; Bijlmer, 1928) that the New Guinea pigmies are not true Negritos but are related to the dolichocephalic coastal tribes, having lost stature due to their difficult environment; and that they become round-headed through a shortening of the brain-base (and thus the head length) which is correlated with the decrease in height. These premises are doubtful, and it is difficult to accept any explanation other than that these people are actually allied with true Negritos.

[4] Bondy-Horowitz, 1932.

[5] Schlaginhaufen, 1914.

[6] Bijlmer, 1923; Wirz, 1924.

[7] Neuhauss, 1911. Neuhauss measured Kai as low as 135 centimeters in stature. While some of the Kai are indistinguishable from the coast people, many are likewise indistinguishable from the central pigmies.

[8] Friederici, 1912–1913.

[9] So called by Friederici, 1912–1913. They are represented cranially by a number of series: a large unpublished one studied by the author, another published by von Bonin in *Biometrika*, vol. 28, and smaller ones published by MacCurdy and Hrdlička.

[10] Parkinson, 1907.

[11] Reported on by Smeltz and Krause, Schlaginhaufen (see Graf, 1931), Rabl-Rückhard, 1884. Incomplete references may be identified in Dixon's *Racial History of Man*, 1923.

The same type is to be found in the northern part of New Caledonia,[12] almost at the other margin of Melanesia. Its affinities seem to be with the Australians rather than with any known group in New Guinea or elsewhere. The cranial measurements of the To people, the New Caledonians, and the Australians are very close indeed,[13] and a large percentage of the skulls of both the former places might be taken for those of Australians, which is not the case in other Melanesian groups. The living members of the type in New Britain do not resemble Australians but look Negroid instead, with woolly hair; they have, however, a well developed beard. The facial resemblance of the northern New Caledonians to Australians is more marked.

In parts of New Ireland and the adjacent islands are found intermediate groups[14] which are probably a mixture between the To people and the Baining. Other parts, all of them small islands, contain people[15] whose light skins, meso- or brachycephaly and narrower noses indicate them to be of Micronesian origin.

New Guinea—The Coastal Dolichocephals

The entire coastal portion of the western half of New Guinea including the river plains of the south is inhabited by what appears to be a single racial group, which is short and dolichocephalic. More precisely, the area extends from Cape Possession in the south around the western end and along the north coast to Humboldt Bay. Stature is 160 to 165 centimeters, and the cephalic index falls largely between 72 and 74, the head being about 188 by 141 millimeters. The face is apparently of medium size, and the nose is mesorrhine rather than platyrrhine.[16] Variations from this form are that in the interior, along the southern rivers, as well as in the Onin Peninsula, the crania[17] represent people of somewhat smaller size with a more marked dolichocephaly and narrower faces. On the north coast the crania are larger in size, although this is the only difference, and the living people correspond in type to those of the southern coast.

These findings are based on a comparatively small amount of data, and one is struck not by any great homogeneity of type in this large area, but rather by the lack of any group which radically departs from it. Little can be added to the description given above. The general appearance of the crania is worthy of comment: they are mostly small and light, and although prognathous and Negroid in form they lack the Australoid character apparent in the To people and the New Caledonians; the brow-ridges are not pronounced, and the facial architecture is lighter.

New Guinea—The North Coast

Most of the remainder of Melanesia exhibits no order or homogeneity of physical type, and the intelligibility of the anthropometric material disappears. The north coast of New Guinea, although represented by good reports, is the most difficult area: from Humboldt Bay eastward stature, head form, and face form change widely from one district to the next with no logical sequence. The author, after considerable research, shares the feeling of Neuhauss,[18] who called the area a "witches' brew," and whose description and photographs clearly convey the wide differences in types obtained, both between groups and within groups.

At Humboldt Bay[19] there are medium-statured mesocephals (index 78) with relatively large heads, and longer faces than occur farther to the east; the external appearance of these people seems typically Negroid. Inland about Lake Sentani, and[19] eastward along the coast of the Territory of New Guinea in the region of Aitape[20] the average measurements do not differ greatly from those of the people of the west and south coasts. They are shorter (160 centimeters) with a wider head (index 76–77), and the face is broader.

The moderate homogeneity of this district may be a false impression. The confusion of types increases toward the east. At Potsdamhafen[21] there is a fairly short people with short and round heads (index 80), whose faces are longer than those of the Aitape coast but shorter than at Humboldt Bay. These people bear somewhat of a resemblance to the Kai, who are near them geographically, although the former are larger, particularly in stature and the length of the face. Several other groups[21] are found, of indeterminate affinities but apparently intermediate in type to the groups described above. Farther east at Cape Nelson[21] there is a return to dolichocephaly and smaller faces, which may indicate an isolated sample of the type of the south and west coasts. This type seems also to recur in a few places at the East Cape.

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[12] Sarasin and Roux, 1922.

[13] Howells, 1937.

[14] Lamassa, Namatanai, Tanga. See Friederici, 1912–1913; Schlaginhaufen, 1908.

[15] Tatau, Tsoi-Boto, Kaniet, Luf. See Schlaginhaufen, 1908; Friederici, 1912–1913; Hambruch, 1936.

[16] Reports by Haddon; Koch; Wirz, 1925; Bijlmer, 1923; Buxton, 1936.

[17] Reports by Mantegazza; van den Broek; Meyer; Wirz, 1926; and Graf, 1931.

[18] Neuhauss, 1911. His description of the region is excellent, and it should be noticed that in 1911 he pointed out the futility of the terms "Melanesian" and "Papuan" as applied to race.

[19] Van der Sande, 1907.

[20] Schlaginhaufen, 1914.

British New Guinea

The rest of the coast, around the East Cape and encompassing the Louisiade Archipelago, as far as Cape Possession, is a special area in which Melanesian languages of two distinct groups are spoken:[22] the Massim, occupying the eastern end of New Guinea as far west along the south coast as Orangerie Bay, and the Motu, extending from this point west to Cape Possession. There are no large areas of uniform physical type, and this heterogeneous appearance accords with the invasion of the Melanesian languages. Seligman says:[23] "If a line be drawn obliquely from the north-western to the south-eastern corner of the Massim area, it will be divided roughly into halves. The southern half, comprising by far the greater part of the land area, is inhabited by a short, predominantly dolichocephalic, rather broad-faced people with moderately dark skin and frizzly or rarely curly hair, and often a 'snouty' mouth. In the northern half, that is to say, in the Trobriands, Marshall Bennets and Murua, the people are usually somewhat lighter in color and often have curly or wavy hair. Their skulls are rounder and their noses are often longer and narrower. . . ." From all the data it is clear that the outermost islands are characterized by brachycephaly, and that the cranial type of the darker, dolichocephalic people is very much like that of the small dolichocephals of the western coast and river plains. The same two strains appear to be present in the Motu area but to be jumbled together without clear arrangement, although light skins and wavy hair are found with considerable frequency to the western border. The same variety in the cephalic index and stature continues beyond the Motu area all around the shore of the Gulf of Papua. There is still a tendency, hardly perceptible, for the smaller dolichocephals to extend farthest inland, and for the mesocephalic and narrow-nosed people to be planted on the shore or in the fringing islands. In two of the latter, Goaribari and Kiwai,[24] well to the west, there are strongly brachycephalic people with distinctly narrow noses, so that they resemble no known Melanesian group.

Altogether there is every reason to suppose, as will be seen later, that the characters of lighter skin, brachycephaly, and wavy hair are connected with the introduction of the Melanesian languages of the area.

Eastern Melanesia

Of the island groups of eastern Melanesia, Fiji, the southern New Hebrides (Tanna and Eromanga), the Loyalty Islands, and the southern half of New Caledonia are, while wholly or partly Melanesian in speech and culture, so largely affected by Polynesian admixture that they cannot yield any information regarding fundamental Melanesian racial elements.[25] The remainder of the area comprises the Solomon Islands, Santa Cruz, and the northern New Hebrides.

The metrical data[26] present a common type in these groups which is short of stature and barely dolichocephalic, with an index of 76 or 77. The head measures about 188 mm. by 144 mm.; the face is medium (breadth 138 mm., height 114 mm.), and the nose is platyrrhine. In the interior of the western Solomons (Bougainville) and in the mountains of Espiritu Santo there are people who are smaller than the above type in stature and head measurements, but who do not otherwise differ from it, while in Buka[27] the people are rounder-headed.

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[21] Bondy-Horowitz, 1932.

[22] See Seligman, 1909.

[23] Seligman, 1909, p. 269.

[24] Data of Haddon, Mantegazza.

[25] Polynesian intrusions have undoubtedly been important in many parts of eastern Melanesia, although they do not appear everywhere to have had the same effect on physical type. The Fijians (Howells, 1933) completely resemble the Samoans and Tongans, except for slightly shorter faces and greater platyrrhiny. Southern New Caledonia (Sarasin and Roux, 1922) is likewise brachycephalic, though short-faced and platyrrhine; these people contrast with their Australoid northern neighbors in their brachycephaly, greater height, and wider faces, features which can only be ascribed to Polynesian admixture in spite of the lack of traces of Polynesian culture and language. These are present in the nearby Loyalty Islands (Sarasin and Roux) and in the southern New Hebrides (Humphreys, 1926), but here the effect of Polynesian blood has been to produce long heads and faces and narrower noses, features recalling the Maori.

[26] Howells, 1933; Shapiro, 1933; Speiser, 1923.

Descriptive accounts of the Solomon islanders give reason to suppose that the evidence of measurements, being based on averages over a wide territory, is misleading. Descriptions and photographs[28] point to a considerable amount of regional difference following both locality and social class. There are strong indications of Negrito blood in the interiors, while on the coast there occurs, intermingled with such types as may be found in New Guinea, a distinctly non-Negroid element which appears in many cases to be Micronesian, i.e., an attenuated form of what may be seen in such groups as Ongtong Java, Rennell, or Bellona.[29]

This state of affairs is apparently echoed in Espiritu Santo of the New Hebrides, where the interior people are dwarfish and may be the mixed remnants of a pigmy stock.[30] Of the coast groups at least one (Talamacco) is plainly affected by foreign blood, which is evident in a long, orthognathous face. This may be of either Polynesian or Micronesian origin and might readily be traced to some such group as the Carolines.

RACIAL TYPES AND RACIAL ELEMENTS

When the information afforded by the bulk of recorded metrical data is summarized, one finds only three moderately definite types, which may be referred to the geographical pattern already described. In the mountainous hinterlands of New Guinea, and probably the Solomons and New Hebrides, is found an atypical Negrito. In the marginal areas, the northern Bismarck Archipelago, and north New Caledonia, there is the strongly Australoid type of the To people. On the southwestern shore and plains of New Guinea are the short dolichocephals of a Negroid cranial type, who may probably also be selected in small groups in the eastern hinterland as well, most of the eastern interior being anthropologically unknown. Aside from the above areas, the northern and eastern coasts of New Guinea, with the coasts of all the other archipelagoes, constituting the central lane of Melanesia, afford a welter of differing types which completely resists the casual anthropometric analysis to which it has so far been subjected.

This, then, is as far as measurements can be of use. However, a considerable body of other information, including photographic, reveals much which is not apparent from measurements alone. In the first place, one's impression is strong that none of the three types described above are "pure" types, in the sense of being elementary, but rather that all are compounds of yet other elements. Before considering these elements, it will be well to draw an analogy, suggested by Neuhauss,[31] between Melanesia and Europe. European races are abstractions, so that the mean measurements of the Nordic or Alpine race cannot be established. The accepted European racial stocks nowhere constitute the type; what actually obtain are either well-defined local types compounded from the major races, or, in cities or on routes of migration, a great heterogeneity.

The Negritos

It is very difficult to doubt that the pigmy peoples of New Guinea are fundamentally of the general Negrito stock.[32] They are evidently much mixed with other groups, and lack some of the facial qualities of other Negritos, but these mixed forms all point, with one end of their scales, toward a common form, short-statured and brachycephalic, with frequent manifestations of other Negrito characters of face and form, while it is true that, at the other extreme, individuals resemble the "Melanesians" of the vicinity.

On this basis, the influence of Negrito blood appears to be wide-spread in New Guinea, being present throughout the northern and central interior. It remains to be demonstrated whether the Baining and the hill peoples of the western Solomons are the result of the same influence. However, some of the Baining groups are of low stature, only slightly above that of the shortest New Guinea groups, and they are brachycephalic. Bearing in mind that the Kai present a similar picture, being heterogeneous but with every evidence of Negrito derivation, it seems that, if the

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[27] Hagen, 1898.

[28] Thurnwald, 1910, Guppy, 1887.

[29] Shapiro, 1933.

[30] Speiser, 1928.

[31] Speiser, 1928.

[32] See footnote, p. 3.

Baining must be supposed to be either a "pure" branch of Negroids, short in stature, and brachycephalic, or a mixed Negrito group, the latter theory must be favored. If this is so, then the Negrito strain may be traced not only in New Britain and Ireland, but in the Solomons and New Hebrides as well.

The Australoids

The Australian type seems clearly to have contributed to the To people, including the north New Caledonians. From this and from geographic considerations, the Australians must at one time have been present in New Guinea, in spite of the fact that there is no good anthropometric evidence of them today.[33] There is, however, strong evidence of another sort, even though it is subjective. This is the presence in many parts of New Guinea of individuals with a distinct, non-Negroid facial form, which will be recalled by any student of photographs. It is extremely ugly. The forehead is receding, and the brow-ridges are pronounced, so that the eyes appear to be deep-set, and the nasion is depressed. The mouth is wide, generally with lips of only moderate thickness, and the chin is markedly receding. There is generally a well developed beard, and it may be noted that the hair is often twisted or braided into small ringlets. The nasolabial sulci are very pronounced. This complex of features is Australoid and not Negroid. As for the nose itself, it is peculiar to the type: it is more convex than the typical Negro form (many Australian noses are convex in the tip), but it is higher and longer than in the Australian. It has the Australian feature of a bulbous tip.

It is not to be inferred from this description that the type looks purely Australian, yet it seems plain that it can only be ascribed to a partly Australian parentage. It is readily recognizable and occurs nowhere as the typical form, but rather as a certain percentage of a group whose remaining members are of a more Negroid type. In such groups there are also individuals who appear to be intermediate. The occurrence of the Australoid type is wide-spread, being found throughout New Guinea, among the central pigmies as well as in the southern river plains and on the north coast. It is probably significant that it appears not to occur on the north shore of Dutch New Guinea, but only back from the coast, nor is it found among the Melanesian-speaking colonies of British New Guinea.[34] However, it seems to be present in undetermined but probably varying proportions all through the main body of New Guinea. It is probably to be seen in the Solomons and the New Hebrides, but not in the Bismarck Archipelago or New Caledonia. On these points, however, the evidence, if it may be so termed, is too indefinite.

Since this "Australoid" type of New Guinea does not appear among the plainly Australoid To people and in north New Caledonia, the question arises as to why all these areas should be considered to have Australian blood. It is the author's guess, and no more than a guess, that the New Guinea Australoid type arises originally from an Australian-Negrito cross.

The Negroids

The third major element in Melanesia appears to be a general Negroid breed, with the typical features of the African Negro: woolly hair, smaller brow-ridges, and more everted lips than the Australian, and a lack of facial hair. This is probably the most important element in Melanesia, yet hardly anywhere does it seem to exist in a pure or homogeneous state.[35] In many areas it is attended by the Australoid type or is combined with Negrito blood, while in others it forms a base to which has been added Polynesian, Micronesian, or Indonesian elements. It is apparently most free from mixture in the western and southern coast of New Guinea (the small dolichocephals) and probably also in southern New Britain. However, even in the southern plains the Australoid type appears and may be responsible for the approximation of the trans-Fly area in metrical characters to the Australians, which is almost the only metrical resemblance of a New Guinea group to the Australians which the author has been able to trace.[36]

Non-Melanesian Elements

The presence in eastern Melanesia of the apparent Polynesian-Melanesian hybrids of Fiji, the southern New Hebrides, the Loyalties, and southern New Caledonia has already been discussed.

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[33] Howells, 1937.

[34] See the several photographs by van der Sande, Seligman, 1910.

[35] The type was probably originally strictly dolichocephalic; crania from Santa Cruz, the Solomons, New Caledonia, and Fiji are all strongly so, while in the living the index is in each case higher.

[36] Howells, 1937.

Speiser, furthermore, states his belief that Polynesian blood pervades the New Hebrides group.[37] Of great importance as evidence are the "Polynesian outliers," smaller, somewhat isolated islands with non-Melanesian culture or language.[38] These are numerous but almost unknown. Only Ongtong Java[38] has been studied physically, and Shapiro makes it clear that the racial affinities of this group are not Polynesian at all, but Micronesian, probably belonging with the Carolines. On the other side of the Solomons lie Rennell and Bellona, two more non-Melanesian islands; these are almost certainly of much the same physical type[39] as the Ongtong Javanese, which is Micronesian with a mild admixture of Melanesian. It appears, therefore, that the Polynesian culture elements of such groups have been stressed at the expense of the undoubted Micronesian elements, Polynesian culture as a whole having been more exhaustively studied.

While it thus remains to be proven, the likelihood is that such islands as Rennell and Bellona, and others in various parts of the eastern archipelagoes are, like Ongtong Java, basically Micronesian in type. Furthermore, this element, in a more dilute form, is strikingly evident in the coastal regions of the larger islands of the Solomons group, so that in many portions it has probably contributed at least half of the mixture. That it appears on Espiritu Santo, main island of the New Hebrides, has already been noted.

Besides these manifestations, what are certainly Micronesian intrusions occur in various islands near the Bismarck Archipelago,[40] and Micronesian culture elements are to be found in the Admiralty group and even on the north shore of New Guinea. It should be noticed, however, that there are also islands here in the west which are of Polynesian origin, rather than Micronesian, an example being Kapingamarangi.[41]

Besides these Polynesian and Micronesian intrusions upon the Negroid stocks of Melanesia, it is probable that Indonesia has also furnished important increments of foreign blood, possibly in the form of colonists but probably also as an admixture to the migrating Melanesians. Indonesian cultural elements, especially in language,[42] are to be found in the eastern groups; possibly some of the non-Melanesian physical features are Indonesian, though this cannot be determined.

As to New Guinea, Neuhauss is emphatic in describing the presence of Indonesian physical features along all of the north coast but believes that they are localized and random, apparently implying no more than the effects of occasional immigrants or castaways. Although nothing has been reported, the population of the extreme western shores probably has its quota of infiltration; many of the inhabitants of the Onin Peninsula are now Mohammedan. Seligman describes the population of British New Guinea as being generally lighter-skinned and more brachycephalic in the off-shore islands and along the coast, while in the western portion, the Motu area, Mongoloid characteristics and wavy hair are unmistakable and common.

Students of language, in general following Ray, have divided the Melanesian languages of British New Guinea into two main groups, Massim (eastern) and Motu (western), accepting them as representing two distinct invasions of the area. Ray[43] derived them both from peoples who had earlier settled in the Solomons and New Hebrides, while Friederici[44] explained the Motu as the most recent migration, coming to its present habitat by a fairly direct route along the north coast of New Guinea and through the Dampier Straights (where a colony became established in New Britain), deriving originally from Ceram. If Ray's hypothesis is followed, the Mongoloid features of the Motu may be explained as Polynesian or Micronesian, although they are of a type not seen in the Solomons and New Hebrides; if, on the other hand, Friederici's explanation be accepted, then these Mongoloid characters are simply Indonesian, which is what they appear superficially to be.

It is quite possible that such an Indonesian strain could form a fairly large element in the Motu area. In the first place dark skins appear to dominate to an unexpected degree in such mixtures as the Fijians, so that the dark-skinned Motu-speakers might still have a large Indonesian ingredient. In the second place, such mixed groups appear to exist in parts of the border area between Melanesia and Indonesia. There is no demarcation between the brown and black areas, and there remains a strong black-skinned element in the Timor Archipelago. Therefore, it is quite possible on physical grounds that the Motu population originated through the addition of an Indonesian strain to a Melanesian stock in such areas as Ceram, as Friederici suggested.

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[37] Speiser, 1923.

[38] See Shapiro, 1933.

[39] On the basis of photographs taken by the Templeton Crocker expedition of 1934–1935.

[40] See p. 25.

[41] See Shapiro, 1933.

[42] Ivens, 1934.

[43] Ray, 1907.

[44] Friederici, 1912–1913.

One final feature should be mentioned: the "Semitic" nose ascribed to the "Papuan" type. It is probable that this term has been applied to more than one type of nose. The nose of the "Australoid" type of New Guinea, while fairly low, is decidedly convex and Semitic-appearing. On parts of the New Guinea coast individuals appear whose noses are strikingly long, high, and narrow, with a convex profile. The latter type is generally accompanied by non-Melanesian features and may be of Indonesian or Micronesian origin, while for the Australoid type there is no satisfactory explanation, except perhaps as a special form caused by the mixture of Australian and Negrito. There is no evidence that either form of nose is due to the immigration of actual Semites who have left only this nose as their heritage, although it is coming to light that contacts between Indonesia and the west are of some antiquity.

LANGUAGE

Although their distribution is not yet perfectly known, the non-Melanesian languages occupy the interior of New Guinea in general, with an occasional extension to stretches of the coast; they are also spoken by the Baining and probably other interior groups throughout New Britain and Ireland and also in the hinterland of the Solomon Islands, particularly in the west. The remainder of Melanesia speaks Melanesian languages. While British New Guinea is best known, the larger part of the New Guinea coast is occupied by languages of the same stock.

The Melanesian family is not clearly associated with racial groups. Its strongholds, however, appear to be those areas where non-Melanesian ("non-black") racial elements are to be found or suspected. The significance of language distribution seems to lie rather in the nature of the peoples who speak non-Melanesian languages, which used to be called "Papuan." Specifically, these are the groups which are composed principally of the postulated Negrito and Australoid strains, with, in some areas, additions of the regular Negro type. However, it appears that many areas where this last stock is probably fairly pure are Melanesian-speaking.

There can be no doubt that the non-Melanesian languages are all older in the area than the Melanesian, and that the latter have been introduced from Indonesia, in many places dispossessing the others.

SUMMARY

Present knowledge is hardly sufficient to settle the racial history of Melanesia. A sequence of types may be postulated, however, to be amended in the light of later findings. Dixon, using a different form of analysis, arrived at the same types and much the same conclusions.[45]

The first comers to the island world were the Australian aborigines,[46] occupying New Guinea, the Bismarck Archipelago, New Caledonia, and perhaps other groups, but all in small numbers. Since Negritos in Australia or a Negritoid strain in the Australians have never been demonstrated, the Australians are to be given precedence,[47] and it does not appear that the Negritos or any other type ever came to Australia in force.

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[45] Dixon (1923) considered that the Negritos (Palae-Alpine) came before, or were associated with, the Proto-Australoids; otherwise the relations and general distributions of these types correspond to those here put forth. He also believed the Australians to be derived from a blend of two strains, the Proto-Australoid and the Proto-Negroid, rather than from a single original stock. See also Davidson, 1937.

[46] Davidson (1937) puts this first migration, on theoretical grounds, approximately at the end of the Pleistocene.

[47] The order of arrival of the Australians and Negritos is a point of the greatest possible importance in racial history, as it is crucial to any orientation of the relations of the black-skinned races generally, since the original connection of the Negritos and the Negroes must be taken for granted. In the western Pacific, people of an Australoid type seem marginal to the Negritos, but on the other hand, the Negritos are found in the central fastnesses of New Guinea; there is thus a question whether priority is indicated better by a central or a marginal refuge area.

The counter argument, that a Negrito strain underlay the Australian type in Australia, is based on the Tasmanians and seems to go back to Turner. The Tasmanians certainly differed from the Australians in a general Negroid direction, but it is very difficult to see in what way they were like Negritos. They were not small nor did they have the light-boned feminized type of skull exhibited by Negritos elsewhere. Excepting for a few measurements, they are cranially indistinguishable from the Australians. In sum, unless there comes to light better evidence than this, the Negritos would appear to be the more recent; and this would appear to be true of Indonesia as well, where signs of Australians are almost entirely lacking.

The next arrivals were the Negritos. These may or may not have been of the typical form such as is found in the Andamans, but it is probable that they were not greatly mixed with other types. If the Baining and similar groups are not directly descended from this stock, it seems certain that they are closely related genealogically and that they followed on the heels of the Negritos. In New Guinea the Negritos mixed to varying degrees with the Australians, while in New Britain, the Solomons, and the New Hebrides they (or the related Baining) tended either to displace them or penetrate beyond them.

There followed what was probably a long series of invasions of Negro peoples resembling the typical Congo forest stock.[48] If these were good boatmen, and hence mobile, they perhaps traveled in relatively small hordes. They settled the coast of New Guinea, mixing with their Australian-like and Negrito predecessors and went beyond to dominate all the smaller islands. In New Ireland and New Caledonia they mingled with remnants of unmixed Australians. These from the beginning or shortly after, spoke Melanesian languages; the earliest groups were Negroid and dolichocephalic while the later invaders (the Motu group probably being the most recent) showed increasing signs of mixture with a Mongoloid strain, perhaps with some such Indonesian type as the Dyak or Battak.

After the settlement of Polynesia and Micronesia,[49] there were random intrusions from these areas. Aside from islands which such invaders occupied outright, there was a thrust of Polynesian blood westward into the southeastern portion and probably a constant southward drift of Micronesian influence in the central and western parts. Thus, in the central archipelagoes there is a series of wedge-shaped zones, with their apices in the New Hebrides. The innermost is of the Negritoid peoples; the second is that of the later Negroid Melanesian speakers; the third is, in the eastern portion, one of Melanesians with a Micronesian (some Polynesian?) admixture; and the fourth comprises outlying islands populated by Micronesians with a Melanesian admixture. As against the Micronesian influences, the important Polynesian intrusions, as in Fiji, the Loyalty Islands, etc., take the form of hybrid colonies.

This article was written in 1937. Additions to the published material in the meanwhile include:

Hambly, W. D., Craniology of New Guinea. Field Museum of Natural History, Anthropological Series, vol. 25, no. 3. Chicago. 1940.

Bos, H. C., Bijdrage tot de Anthropologie van de Bevoking der Schouten-Eilanden. Nederlandsch Nieuw-Buinee. Rotterdam. 1935.

Capell, A., Language study for New Guinea students. Oceania, vol. 11, pp. 40–74. Sydney. 1940.

Dr. Douglas Oliver has obtained valuable material, not yet published, from the Solomons. Dr. Joseph Birdsell has discovered a definitely Negrito element in Australia, in the vicinity of Cairns, Queensland. For a preliminary notice, see Proceedings of the Twelfth Annual Meeting of the American Association of Physical Anthropologists, American Journal of Physical Anthropology, vol. 28, no. 3, Suppl. 1. Philadelphia. 1941.

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[48] The author is here carefully neglecting the question of how the Oceanic Negroes are to be related to those of Africa. The Negritos of the two areas may be connected by colonies or remnants of a pygmy strain in Indonesia, the Malay Peninsula, and India. But of Negroes the whole interval is sterile; the hiatus is complete. It is possible to see, in the primitive parts of India, individuals of a Negritoid or an Australoid character, but none of a Negroid. However, it does not seem possible to escape the conclusion that in Melanesia there is a true Negro form, whatever its origin. The Negro is too special a form to be explained in Oceania as a composite type, and it will hardly do to reinterpret him as an oversize Negrito. The most general hypothesis which would be possible for the Negro is to suppose that he had a very ancient origin in Asia, although the African evidence does little to foster the idea.

[49] It seems unlikely that any Polynesians settled in Melanesia as a result of passing through the area, except perhaps in Fiji.

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VI

THE HOROMORUN CONCEPTS OF SOUTHERN BOUGAINVILLE: A STUDY IN COMPARATIVE RELIGION

Douglas L. Oliver

INTRODUCTION

BOUGAINVILLE ISLAND in the northwest Solomons is about a hundred and twenty miles long and thirty miles wide. Two mountain ranges with peaks rising as high as ten thousand feet dominate the landscape. Wide moats of swampland encircle part of the eastern and most of the southern and western parts of the island and separate the forested interior from the narrow, pest-ridden beaches.

Some thirty-five thousand black-skinned[1] natives dwell on the island; they vary from timid Negritoids living along the mountain slopes, to bold, stalwart canoe-men occupying many of the habitable beaches.

Linguistically, the population can be separated into Melanesian- and Papuan-speakers; the former are concentrated near the coast and the latter—in most instances—in the interior. Eight Papuan and seven Melanesian languages have been distinguished; there is a possibility that these can be reduced to two Papuan and two or three Melanesian families.

Falling away south and west from the central-southern range is an extensive, gently sloping alluvial plain dissected by numerous rivers and streams and covered with luxurious rain forests. This I call the Greater Buin Plain. Most of its seventeen thousand inhabitants[2] live inland—separated from the coast by miles of swampland. A few hundred natives still cling to their beach homes in spite of pests, poor fishing, and poorer gardening. Gradually, however, they are moving inland to a dryer and a more salubrious country: I have reason to believe that this has been going on for a long time—thus bringing about a *papuanization* of the coastal Melanesian-speaking settlers.

On the basis of language differences, Greater Buin Plainsmen may be grouped into *ru·gara*-speakers (about 7000 natives), *motuna*-speakers (about 5000), *sibbe*-speakers (about 3500), and *banone*-speakers (about 1500). *Banone* is a Melesian language; *ru·gara*,[3] *motuna*, and *sibbe* are closely related Papuan languages (dialects, if you like) which—together with *nasioi* (northeast of the Greater Buin Plain)—comprise a hypothetical southern Bougainville Papuan family. One cannot very well characterize all the speakers of any one of these languages as constituting a *tribe* in the ordinary ethnographic sense: never do they operate as a unit, comprise a single political hierarchy, etc. Nevertheless, common language has promoted common culture (or vice versa), so that we can speak with justification of the *Terei* people (*ru·gara* language) and area, the *Siuai* people (*motuna* language) and area, the *Nagovisi* people (*sibbe* language) and area, and the *Banone* people (*banone* language) and area. Within each of these areas there are still further subdivisions discernible on the basis of slight dialectic and cultural distinctions.

There occurs in every area throughout the whole of the Greater Buin Plain a complex of beliefs (and practices) associated with a creature known variously as *horomorun*, *paramorun*, or *oromurui*. It is the purpose of this comparative study to examine similarities and dissimilarities in these beliefs and to suggest reasons for such differences as do occur.

I shall begin with a subarea, northeast Siuai, about which my knowledge is most complete.[4]

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[1] Skin color is almost uniformly No. 34 on the Von Luschan scale.

[2] I am indebted to Mr. K. Bilston, patrol officer in charge of the Buin administrative subdistrict, for these population figures.

[3] *ru·gara* is the peoples' own name for their language. For the sake of consistency it seems advisable to adopt this principle of language-naming for the region.

[4] The writer and his wife were in Bougainville from February, 1938 to April, 1939, and from July, 1939 to November, 1939. This field work was sponsored by the Peabody Museum of Harvard University, Cambridge, Massachusetts, U.S.A., and was made possible by generous financial aid from the Museum and from Louis Pierre Ledoux, Esq., of New York City. We gratefully acknowledge this assistance and wish to express our

Northeast Siuai is in the center of the Greater Buin Plain, midway between coast and mountains. It is bounded on the west and east by the Mopiai and Mivo rivers, on the north by uninhabited rain forest, and on the south by swamp. The slope is gradual but perceptible, and the plain is broken up into a series of narrow and more or less parallel interfluves. Settlements are of two sorts. There are the older two-, three-, and four-house hamlets located near stream level, and the larger villages most frequently located on top of the interfluves. The former follow old-time, native conventions; the latter were created by Colonial officials a few years ago in order to expedite administrative control. Most natives now have two separate dwellings—one in a village and one in a hamlet or off by itself near the gardens.

Taro is the staple crop. Taro gardens are laid out along the interfluves and are mainly immediate-family enterprises. As a matter of fact, nutrition is very largely the affair of the immediate family except when members of several families occasionlly co-operate and form a work-team for the purpose of clearing land or preparing canarium almonds and sago.

Most immediate-families are monogamous. Husband, wife, and children occupy their own houses, cultivate their own garden, and constitute the most frequently interacting group. In this sense, the immediate-family is the basic institution.

Frequently, members of several related immediate-families live together in a single hamlet and comprise, literally, an extended family. There is no invariable rule of residence in connection with marriages, so that some of these extended families are aligned matrilocally, some patrilocally, and some mixed.

One can distinguish both matrilineages and patrilineages. A matrilineage is made up of about twenty persons who are related to one another by genealogically demonstrable matrilineal kinship ties, who share totems, common sacred traditions, ritual paraphernalia, shell money heirlooms, shrines, and tracts of economically valuable land. Members of a matrilineage sometimes live together, in which case they constitute a local group and the nucleus for an extended family. Almost as frequently, however, members of a single matrilineage live scattered around in several hamlets—belong to separate extended families—and interact with one another only on special occasions. Matrilineages combine to make up subclan and clan. The clan is an exogamous unit whose members share a common totem and claim matrilineal descent—not usually substantiated by genealogical proof—from a common demon ancestress.[5] Several clans are represented in northeast Siuai but only on very rare ritual occasions do clan or subclan members interact as a group separate from all other aggregates of individuals. Neither do they share any economically valuable land.

It is clear from a mass of symbolic data that the unilateral bias of this northeast Siuai population is matrilineal. Nevertheless, in many a case an extended family is formed around the nucleus of a patrilineage, and in such a case patrilineal ties are sometimes honored by proscriptions: the eldest child refrains from eating its father's totem, children are christened with their father's clan ritual formulae, etc.

All the above groupings are based upon kinship of one sort or another. Over and above kinship groupings is another kind of institution which we can call "local" or "political."

POLITICAL GROUPS

The male residents of several neighboring hamlets used to[6] combine forces to work together, to prepare or attend feasts, to gossip in a common club-house, or to carry out raids—all under the stimulus and direction of a leader, called a *mumi*. When the Australian officials began concentrating hamlets into villages they took cognizance of these political groups, so that nowadays there is a fairly close correspondence. For example, between the Tohoro and the Kuru rivers there are several hamlets—Moronei, Hiuannai, Siuno, and Tokei—whose male residents used to work, feast, and fight under the direction of a *mumi* named

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gratitude for hospitality shown us by Dr. Ian Hogbin of Sydney, and E. W. P. Chinnery of Rabaul. Most of all are we indebted to members of the European Colony on Bougainville—to Dr. and Mrs. A. Price, Mr. and Mrs. A. Scott (Burns Philp, Kieta), Mr. Rolf Cambridge, Mr. and Mrs. C. Doyle, Mr. J. Merrilees, Mr. and Mrs. K. Bilston, Mr. and Mrs. Voyce, and to His Excellency the Rev. Bishop Thomas Wade, Father Poncelet, Father Schlieker, Father Tönnius, and Father Weber—all of the Marist Mission.

[5] Using totemism alone as a membership criterion, some clans can be said to be distributed throughout the whole Island.

[6] "used to" means prior to 1920 or so—before the Australian administrators brought the population under control.

Moki who lived in Moronei hamlet. Australian officials caused residents of all four hamlets to build a centrally located village which they called Moronei village and over which they placed Moki as *kukerai* (pidgin for "headman"). About the only difference between the old and the new arrangements is that all the members of the political group now have a common village residence.

Some knowledge of the organization of these political groups is essential to the argument of this study and must be considered in more detail.

The leader, or *mu·mi*, of a political group reaches his position by means of social-climbing. He gains prestige by providing feasts for his neighbors so that they come to look upon him as the leading citizen of the community and respect his opinions and wishes.[7]

In order to become a *mu·mi* a man must own or control material resources. He can either accumulate these by his own hard labor or he can persuade kinsmen and friends to extend him loans. One customary method of accumulating wealth is to cultivate large gardens and convert the surplus taro into pigs which can then be sold for shell money. Another method is to make pottery and sell that. Still another is to practice for fees as a professional shaman or diviner, etc.

The mere *accumulation* of wealth, however, does not bring prestige; wealth has to be distributed effectively—which, in this region, is another way of saying that it must be used to provide feasts. It is useful to have had a *mu·mi* father, to have started off in life with some of his reflected prestige together with what remains of his wealth after it has been decimated by mortuary distributions. Such an initial advantage prompts many informants to say that "only the son of a *mu·mi* can become a *mu·mi*." Actually, the *mu·mi's* son is only slightly better off than the orphan; he has to increase his inheritance manifold—or have very liberal financial backers—before he can begin serious social-climbing.

It is no wonder that the feast-giver is a highly honored man. Feast food (roasted and steamed pork, boiled eel and opossum, tasty vegetable and nut puddings) provides a welcome break in the day-in and day-out monotony of a vegetarian diet. Then too, natives keenly enjoy the excitement of milling crowds and the pleasure of pan-piping and dancing. However, the ambitious social-climber does not merely invite a few of his friends and treat them to a banquet: that would be gratifying but not very economical. He generally makes his feast the occasion for a house-raising or some other kind of work-bee—no one respects him any less for that.

The ambitious man nearly always begins his career by building a club-house.

The club-house is a rectangular, shed-like structure built directly on the ground and without walls (pl. X). Occasionally, an apse is added to the rear or to both front and rear. Large wooden slit-gongs occupy most of the floor space; these are beaten in order to convene workers, to announce feasts, etc., and serve as benches for the men who gather in the club-house to gossip and sleep. In this region house-to-house visiting is not traditional, so that the club-house is virtually the only important gathering-place. Accordingly, the man who wishes to increase his prestige must provide himself with a club-house. The most effective way to do this is to collect as many men as possible, draw out the work for as long a time as possible, and compensate the workers with such a bountiful feast that they will ever afterwards remember the occasion and the club-house with pleasure.

Club-houses are at no great premium in this region—there is an average of one club-house to every eight adult males, so that mere possession of one does not assure the owner lasting renown. To serve as an *effective* symbol of the owner's growing prestige the club-house must be the scene of constant activity, and since nothing draws crowds like a feast, the ambitious owner exploits every opportunity by giving a feast. He causes men to cut down trees, fashion them into slit-gongs, and install them in the club-house; then in return he rewards them with a pork meal. When no more slit-gongs can be crowded into his club-house he causes the roof to be repaired or the floor swept, and provides food for each occasion. After a while natives will say of him: "He is a true *mu·mi*: he gives large feasts." And when they stroll about they never fail to say: "Let's drop in at so-and-so's club-house; there's usually something going on there." They are at pains to ingratiate themselves with the feast-giver, to defer to his judgment, to fetch coconuts for him, and laugh at his sallies of wit. In this fashion, the ambitious social-climber assures himself of a following and at the same time extends his prestige beyond his immediate village.

Some *mu·mis* stop there; others are driven on

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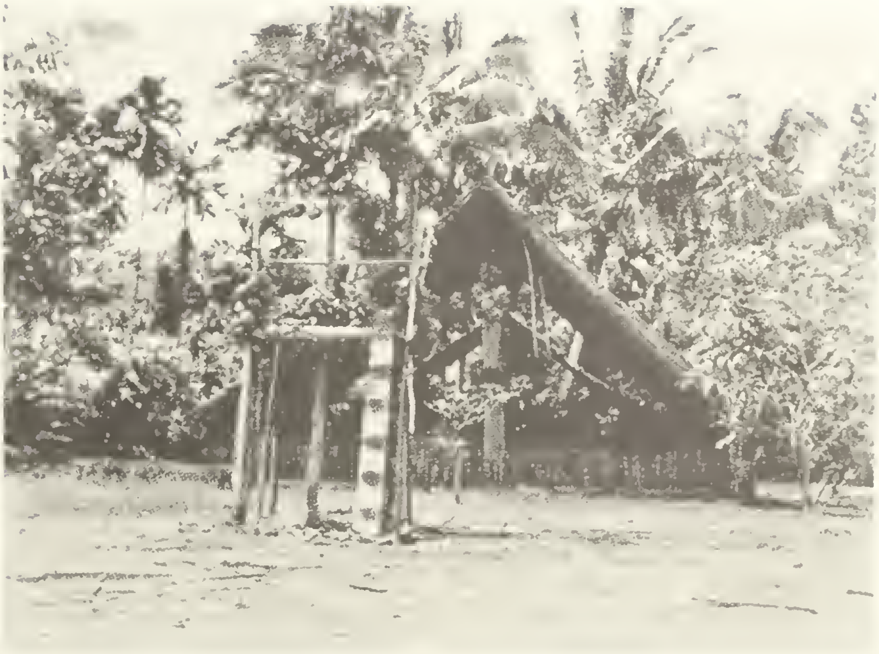
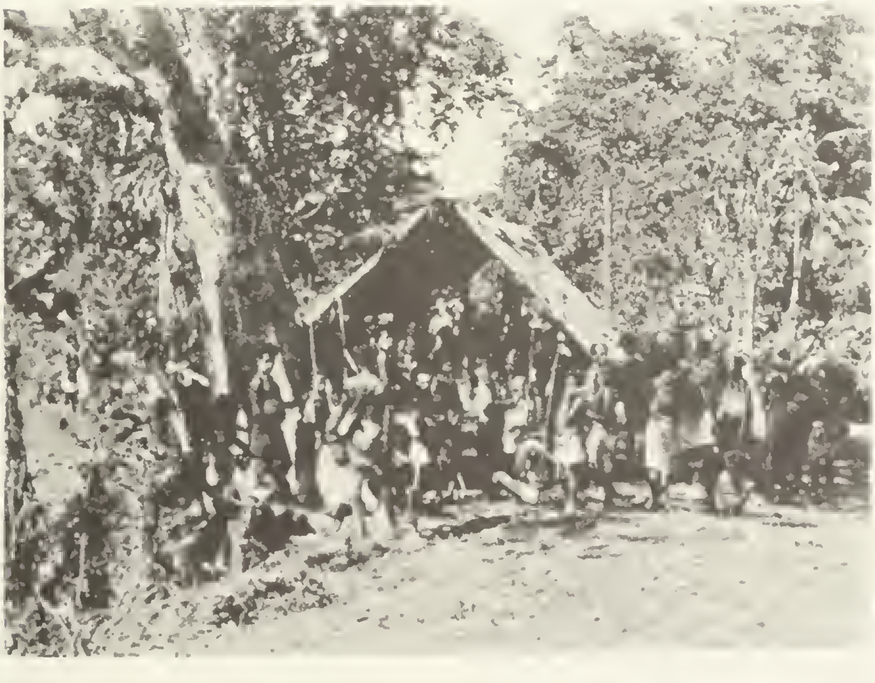
[7] Hogbin, 1938.



X. Siuai club-house with food display platform (*raoku*) in foreground. The large wooden slit-gong on which the *horomorun* sometimes rests is shown by the end pole at the forward end of the club-house.



XI. Participants at a social-climbing feast waiting for food to be distributed.

by their ambitions to seek wider acclaim and fuller authority. *Their* careers turn into continual rivalries for prestige and power. *Mu·mis* in neighboring villages seek to out-do one another in largeness, and the adherents of each *mu·mi* line up behind him with patriotic fervor in order to assert the superiority of "our place" and "our *mu·mi*." These rivalries culminate in a "*mu·mi*-honoring" feast at which the host presents his guest of honor—his chief rival—with large quantities of shell money and numbers of pigs. The guest of honor than redistributes these gifts among his own following and sets about to raise an equivalent—or more than an equivalent—supply in order to reciprocate. If he cannot repay within a year or two he loses prestige and cannot continue social-climbing. If he returns an equivalent gift it is a sign that he is a resourceful man—a true *mu·mi*—but that he does not wish to compete further. If, however, he returns *more* than an equivalent, the rivalry continues until one of the two bankrupts himself and all his followers and retires in defeat. A supernatural sanction is added to the whole affair by co-operation of spiritual beings. Clan ancestral spirits of the creditor *mu·mi* accompany the "gift" and remain with the debtor-guest until he repays. If he does not repay, these spirits tear out his soul—render him "near-death" (*mohkoru*). Thus, a man defeated in a feast rivalry is said to be in a fatal predicament. Of course, he does not die right away (and I saw no evidence of any physical wasting-away); he might, in fact, linger on for years in good health, but—they say—his fate catches up with him sooner or later.

All metaphor aside, the defeated man is certainly "dead" insofar as further social-climbing is concerned.

A successful social-climber is fortunate for a number of reasons. He has little difficulty about raising loans. Hangers-on take care not to offend him. By withholding his favor and patronage he can usually bend followers to his will. Nevertheless, no matter what his prestige happens to be, his authority is not absolute and rarely extends beyond his own village. There is little to stop a follower from moving away to another village, and fines constitute the extent of the *mu·mi's* ability to penalize.

All this provides the setting for beliefs about *horomorun*.

HOROMORUN

The world—to these natives—is populated with many kinds of beings. There are human beings, and their souls (*ura*) survive after death in the form of ghosts. Ghosts go north to the *Ru·no'no'* lake but often return to the scene of their former homes and influence human lives. Demons are different; they have always been demons, were never human souls. Demons are generally malevolent, but some of them may be induced to assist human beings, provided offerings are made and rapport established. Diviners and shamans are effective only to the extent to which they can control demons. Ordinary men can sometimes buy demons outright from previous owners or buy the magical means to invoke them; having done that, they can press the demons to various kinds of labor, the most important of which is to protect property. It is quite logical that the man whose property is the most inviolate is he whose demon is most jealous and powerful. Nor is it at all surprising that the most ferocious demons are in the services of *mu·mis*.[8] Such demons are called *horomoruns*.

Ghosts are said to be small and white and to look much like insects. Demons (*mara*) are larger and darker; some of them look like dwarfed and deformed human beings, and their bodies are covered with fur like that of a tree rat. *Horomoruns* are largest of all; their heads are enormous and sometimes covered with red matted fur. They are fierce beyond imagination and usually wander around settled areas—never in the forest—planning and carrying out malicious deeds. Usually, they are invisible but sometimes transform themselves into visible *Boiga irregularis* snakes (motuna, *ha·yovo*).[9] Ordinarily, *Boiga* snakes are not at all dangerous; but when a *Boiga* is seen in the vicinity of a club-house it is known to be a *horomorun*, and if it appears to anyone but the club-house owner or a professional shaman, that person knows he is doomed to die. (A great many persons I knew had seen snake-*horomoruns* and were admittedly doomed but did not seem particularly concerned about it.) When such a person does finally die—whenever or however that happens to be—his death will be explained thus: "He saw a snake-*horomorun*."

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[8] Native plural forms are complex: *mu·mi* (sing.), *mu·mikaro* or *mu·miŋaro* (dual), *mu·mariŋom* (plural); thus I shall use *mu·mis* and *horomoruns* to avoid complication.

[9] I am indebted to the Rev. Father Poncelet, Turiboiru Mission, Bougainville, for identifying this and many other forms of fauna.

Horomoruns survive only if they are fed continually, and it is not surprising to learn that they depend solely upon the essence (*rumaruma*)[10] of pigs' blood. Consequently, *horomoruns* reside in club-houses where feasts are continually being held and pigs' blood always available. Before, however, a *horomorun* can take up residence in a club-house it must attain rapport with the *mu·mi* club-house owner.

A wandering, homeless *horomorun* is careful to seek rapport only with a man of prestige, with one whose reputation as a feast-giver is already established, or with a younger man whom the *horomorun* judges to be a potential *mu·mi*. (How the *horomorun* is able to judge that, my informants could not say very explicitly. "The *horomorun* merely looks at a man and *knows* that he will be a *mu·mi*!") In order to attain rapport the *horomorun* frightens away the soul of his victim, who then sickens. First of all the victim's kinsmen try simple household remedies or engage the services of the local practitioner. Then if these measures fail they send for a shaman who diagnoses the true cause of the illness and announces that the patient has been honored: "A *horomorun* has sought him out to establish rapport."[11] The shaman goes on to explain that the *horomorun* wishes to eat the blood-essence of such-and-such a number of pigs in return for which it will reside in the patient's club-house and help him increase his prestige. Then he adds that if the patient *does not* accede to the *horomorun's* request then the sickness might prove fatal.

Of course, the patient provides the pigs—either his own or his relatives'—and has them placed near his club-house. Then outside his dwelling is placed a large pole to which taro and coconuts are fastened, and the *horomorun* is invited to sit astride. A score or more men carry the pole to the club-house; others assist the patient to follow along. The pigs are slaughtered and their blood smeared on the forward pole of the club-house; while this is taking place a magician laves the patient with water and repeats:

> Strength [Let strength return.]
> Unawere did this [Unawere used to perform this ritual effectively, so I do likewise.]
> Makumi did this, Konukura did this, Makuna did this, [etc.][12]
> [Let] strength [return.]
> Tonoposi did this, Koronoruhi did this, [etc.]
> [Let] strength [return.]
> Thou [*horomorun*] who art angry with this man must go to the place of ghosts and allow his soul to return here from the north.

Thereupon the *horomorun* replaces the victim's soul in his body, partakes of the pigs' blood-essence, and begins residence in the club-house. And, of course, the victim recovers his vitality and prepares for renewed social-climbing. By dwelling in the club-house the *horomorun* makes it doubly untenantable for females. To be sure, females are barred from entering any club-house —whether it be *horomorun*-haunted or not; but the presence of a *horomorun* there adds to the danger. A frequent cause for a female's death is given as: "she walked too close to the club-house and the *horomorun* killed her." The *horomorun* also makes the club-house unsafe for any person who happens to be evilly disposed towards the *mu·mi*-owner.

It behooves people to speak respectfully of a *mu·mi* who entertains a *horomorun* in his club-house. A *horomorun* might become so jealous of the prestige and safety of his *mu·mi* that it becomes unsafe for lesser persons to refer to the *mu·mi* by his personal name. Rather must one say: "the *mu·mi* did so-and-so," or even: "the *horomorun* [=*mu·mi*] did so-and-so."

The *horomorun's* resting place is on the largest slit-gong or along the ridge-pole of the club-house. A shrine (*sapu*) is made by driving a peg into the front pole, and on this bits of pork are placed whenever a pig is slaughtered in the club-house.

> The owner does this quickly—as soon as the pig is slaughtered. Otherwise, the *horomorun* will smell the pork being cooked and will kill the *mu·mi* out of anger.

Thus, although the *horomorun* is a constant source of pride for the *mu·mi* it is also a continuous threat, a dangerous responsibility. If pork meals are not forthcoming frequently enough, the *horomorun* might go in search of the *mumi* and cause him to sicken again. More pigs have to be slaughtered to induce the obstreperous demon to return to the club-house. This kind of placation must be continually resorted to, for the *horomorun* must be kept away from dwelling houses at all costs. Otherwise, it will visit the *mumi* with all sorts of illnesses, or it will play outlandish pranks on youngsters, or it will assume human form and copulate with women and thus bring about their deaths.

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[10] *Rumaruma* in addition means *odor*, *breath*, and *vitality*. A lusty young man is called a "*nommai* [person] *rumaruma*."

[11] I shall not attempt in this paper to give concrete cases and go into the sophistry of such a diagnosis. Here it is merely intended to outline native theory behind the practices.

[12] This is the standard pattern of most magical formulae of these natives. They begin with a word like "strength" or "vitality," etc.; then follows a list of names of all magicians (deceased) who in the past performed the rite successfully; then is added a supplementary statement more pertinent to the case in question. Informants insisted that the magician does not call upon the ghosts of former magicians to *assist*; he merely states that "So-and-so used to do this with good results so now I do it."

Thunder-and-lightning accompanied by rain are perfectly normal occurrences; there are human rain-makers who can also produce thunder-and-lightning. At other times thunder-and-lightning (one entity) is regarded as a demon; it strikes trees and houses with equal devastation. Sometimes a hunger-angry *horomorun* transforms itself into thunder-and-lightning (unaccompanied by rain), strikes down a large ficus tree and roars out a warning for food.

Horomoruns enter into the everyday lives of their *mumi*; a concrete example will help to illustrate:

> During November, 1938, Mousi—a *mumi* of Hiunnai village—became ill, and it was suspected that his unfriendly brothers had poisoned him. But before he died, Mousi explained what had actually happened: He had quarreled with his brothers and had vowed by his *horomorun* never to enter their houses again. Later on, he forgot his vow and ate food with them in their houses. His *horomorun* became incensed and killed him. His brothers—he emphatically stated—had had nothing to do with his death.

Horomoruns are sometimes called "the *mumis* of all demons." They carry on much the same kind of existences as human *mumis*; for example, there is a tale about a *horomorun* who raises fish in the same way that a human *mumi* raises pigs. This demon placed *koriyi* fish (a perch, *Dulces Rupestris* in a deep pool and called it "penning-up my pigs." Afterwards, men came along and killed the fish and ate them. Soon one of their number who was a *mumi* died; the *koriyi*-eating was the *horomorun's* "*mumi*-honoring" feast to which the unfortunate *mumi* had made no equivalent return—and consequently died.

The most striking of all correspondences between *horomorun* and *mumi* is the belief that for every human follower of the *mumi* there is a lesser demon-adherent of the *horomorun*. It is even said that whenever a male is born in a village whose *mumi* entertains a *horomorun*, then there is also a demon born; and whenever one of the *mumi's* adherents dies, then one of his *horomorun's* demons also expires. As far as I could discover there is no rapport established between a human-adherent and his corresponding demon-adherent; these latter are said merely to "assist the *horomorun* look out for the interests of his *mumi*."

Backed up by its demon-satellites, the *horomorun* can aid the *mumi* in various concrete ways. One of the most important of these is to protect his coconut palms. There is not much thievery in this region, but the temptation to quench thirst with cool, tangy coconut water frequently leads one native to take nuts from another's palm. This state of affairs constitutes a serious disadvantage for a *mumi* who must keep his supplies intact in order to provide delicacies for his feasts. Accordingly, the *mumi* instructs his *horomorun*—by means of a simple rite—to guard his palms. The demon and his satellites carry out the instructions all too well. It is told of one *mumi* that he himself thoughtlessly took nuts from a palm he had tabooed in this manner, without first having released the taboo with proper ceremony. The *horomorun* was thoroughly literal-minded and his *mumi* died a miserable, writhing death.

It was mentioned earlier that nowadays a *mumi* has no armed authority, that whatever control he exercises comes about through other means. Now, a *horomorun* can become an effective instrument to enforce his *mumi's* wishes, and the more prestige a *mumi* has, the fiercer becomes his *horomorun*. Within the frame work of Siuai belief this is quite a logical parallel. The more feasts a *mumi* gives, the more vitality-giving pigs' blood-essence there will be for the *horomorun*. *Horomoruns* have been known to become weak, wraithlike, and ineffective for lack of nourishment; sometimes they expire, but not without first having slain their mediocre-become host. If the *horomorun* is still vigorous after the death of its *mumi*, then it wanders around in search of another host; by preference it seeks rapport with a son or maternal nephew of its former host.

The above account has been couched in fairly general terms; to supply full concrete details would lengthen the description unnecessarily, but it might be helpful to add that among the total population of about 1000 natives in northeast

Siuai there are forty club-houses in only twelve of which *horomoruns* reside. Also, in the entire region there are known to be three unaffiliated *horomoruns* wandering around searching for hosts. One of these is Masa, a fierce demon who used to be with the *mu·mi* Konsei. It is said that Masa is waiting to seek rapport with Tomo, Konsei's sister's daughter's son, but that he might reconsider, since Tomo shows little disposition to build a club-house and become a feast-giving *mu·mi*. Masa is in the meantime without sustenance; this seems to have impaired his vitality because of the many women who claim to have been seduced recently by Masa not one has died.

During my stay in this region, Soŋi, the *mu·mi* of Turuŋom village, was well on the way to becoming the leading social-climber in the whole Siuai area. He was the most talked-of man in the northeast and was busily engaged in competing with *mu·mis* in other regions—according to my informants no such success had ever before been achieved by a single man. Correspondingly, unique powers were credited to Soŋi's *horomorun*. It was said, for example, that it was Soŋi's *horomorun* rather than his clan ancestral spirits—as was customary (cf. above, page 53)—who accompanied the gifts Soŋi made to his rivals and who killed these latter if they did not reciprocate. At first, some natives considered this claim to be heretical, but then after thinking it over concluded that it must be correct: "after all," one of them admitted, "the *mu·mi* honoring feast is not an affair of the clan!"

By careful observation and persistent interviewing among the natives of northeast Siuai, the ethnographer can piece together a fairly complete picture of matrilineal clan institutions. Matrilineage mates often live together; most of the individual's life crises are signalized by clan rites performed by his clan-mates; a large proportion of economically valuable land is associated with matrilineages (but not with *whole* clans or sub-clans); marriage is regulated largely by matrilineal ties; etc. Moreover, there is a rich and—for this region—not *too* inconsistent corpus of clan genesis myths which provides some theological dogma concerning the relationships of man to man and man to nature. One could claim with complete justification that matrilineages "function"—I use this term with some embarrassment!—quite vigorously, and that clan rites and clan mythology are important paraphernalia for these natives. On the other hand, one would have to admit that *political* groups "function"—having committed this terminological indiscretion, it seems more useful to carry on with it!—much *more* vigorously. Political activities—accumulating wealth, interacting with political affiliates, preparing for feasts, conniving for prestige, gossiping about social rivalries—use up much more of the time and energies of the adult males than does preoccupation with matrilineage or clan business. Neither political nor clan activities, it is true, occupy as much time as does interaction among immediate-family members in the daily routines of gardening, eating, and sleeping; but, speaking loosely, one could say that the political institution is more "important"—for the adult male, at least—than the clan institution. This statement could be fully documented, but that is not feasible here. A few generalizations will have to suffice.

An ambitious *mu·mi* does not hesitate to compete with, to obliviate socially, a clan-mate. (Nor in the past would he have hesitated to slay him in a political feud.)

Patrilocality—practiced almost as frequently as matrilocality—serves to weaken clan ties, to decentralize matrilineages and to attenuate the connections between matrilineages and land. On the other hand, peaceable conditions have made possible larger political aggregates and increased interaction among members of neighboring groups. Furthermore, the government has lent its sanction and support to political leaders and has even encouraged patrilineal succession—a process, by the way, which was incipient in the native institution.

In some cases, *horomoruns* are said to be "stronger" than *Kupuna* (demon clan ancestresses). It will be recalled that Soŋi's *horomorun* is said to be taking over the functions ordinarily carried out by demon clan ancestresses.

In summary, it can be stated that among the northeast Siuai the adult males of almost every village are organized hierarchically into political groups with native leaders, *mu·mis*, at the top. Status in these hierarchies depends upon a man's prestige, which in turn depends upon his ability to give feasts. There are hierarchies of demons which correspond to these political groups, member-to-member; and at the top of each demon-hierarchy is a *horomorun*, whose power is directly correlated with the prestige of his *mu·mi* counterpart, and whose role is to lend supernatural sanction to the authority of the *mu·mi*.

It can also be stated that in this region political institutions are more important than clan institutions (for adult males, at least), and that "political" supernaturals are tending to supersede clan supernaturals.

THE NAGOVISI PARAMORUN

The thousand natives whose institutions and beliefs we have been considering comprise only about six per cent of the population of the Greater Buin Plain. They constitute the northeastern division of the Siuai. Northwest of the Siuai area is Nagovisi, and to the east is Terei. Siuai, Nagovisi, and Terei speak closely related Papuan-type languages—not mutually intelligible, it is true, but unmistakably similar in syntax and vocabulary. The exceedingly complex verb forms are conjugated in near-identical fashion; sentence structure, noun classification, counting and measurement techniques, vocabularies—in all these departments the correspondences are striking.*

Strikingly different from these Papuan-type languages is the Melanesian Banone, whose speakers live along and inland from the southwest coast and claim ancient connections with Mono Island to the south, thus substantiating the ethnographer's judgment that they are intrusive.

It is now my intention to see whether or not the *horomorun* concept has any parallels throughout the rest of this Greater Buin Plain area.

The Nagovisi region lies higher up along the plain slope and is in places very deeply dissected by river gorges. Consequently, the terrain is rougher than in Siuai; this, together with more extensive growth of bamboo, is the chief distinguishing mark of the region.

The inhabitants are black, just like other Greater Buin Plainsmen, but they are shorter in stature—more Negritoid—than their neighbors. Siuai call them "*kevereua*"—dwarfs—and explain their short stature as having come about through their being forced to walk under the low-lying clouds.

Nagovisi settlements are smaller than Siuai ones and the population is more thinly scattered. Only within the past three years or so have government officials succeeded in consolidating many of the hamlets into villages. It is not unusual to see new villages filled with well-made houses completely lacking in signs of occupation; the owners merely convene there during the annual patrol of the official, and then return to dwell in their small hamlets.

Natives here rely more upon sweet potatoes than in the Siuai area; taro is still the staple crop, but I received a very definite impression[13] that taro gardens are not as extensive nor as well-made and kept as in Siuai. Again, in comparison with Siuai, there are far fewer pigs and less shell money; in fact, the Nagovisi seem to be poorer in almost every department of material culture.

Here as elsewhere the immediate family is the basic institution, but—in comparison with northeast Siuai—marriages are more frequently matrilocal, and polygamy, still more exceptional.

To me, coming to this area from Siuai, the most striking aspect of Nagovisi culture was the extremely rudimentary form of the political institutions. Club-houses (sibbe, *raopai* (singular) = motuna, *ka·poso*) are fewer and smaller, with at most two or three slit-gongs, the rest of the space being taken up with benches. Club-houses are not limited to men; women have a perfect right to visit in them. This state of affairs was a shock to my Siuai servants.

Feasts are said to be held much less frequently, to be a great deal less lavish, and to attract fewer people than in northeast Siuai. Leaders are called *mu·miako* (cf. motuna, *mu·mi*); but one of my informants who had married and lived for a while in Siuai assured me that there were no really big feast-giving leaders in Nagovisi. Such *mu·miako* that were pointed out to me were usually venerable old men far past their prime and who were described as being: "the *muŋmako* of such-and-such a moiety" rather than—as in northeast

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* All these data will be documented in another paper, but it will be useful to illustrate the similarities by means of a few examples from the kinship terminology:

	Sibbe (Nagovisi)	Motuna (Siuai)	Ru·gara (Terei)
my mother	ŋko	muka	anakanu
thy mother	ro·ku	ro·ku	ro·gu
his, her mother	wo·ku	po·ku	bo·gu
our (inclusive, plural) father	niuma	ne·mo	reumo
our (exclusive, plural) father	neuma	nonnimo	
your father	rioma	re·mo	raumo
their father	bioma	pe·mo	baumo

[13] Data on this region was collected—entirely through interpreters—during a month's visit there. I am greatly indebted to Father Tornius of Sovele, Nagovisi, for much friendly assistance and information.

Siuai—"the *mu·mi* of such-and-such a place."

The unimportance of political institutions is in direct contrast to the emphasis upon kinship relationships and activities. Matrilineages form the basis for most extended families. Several matrilineages go to make up a clan, and there is more legitimate basis for speaking of "clan groups": clan-mates live nearer one another; the territories of related matrilineages are less scattered so that one can speak of "such-and-such a clan region"; what few feasts occur are usually held in connection with clan rituals; and, as mentioned above, leaders are called "leaders of such-and-such a moiety."

Clans are drawn together into moieties. In northeast Siuai the moiety organization can only be detected by laborious—and not always convincing—reconstruction (i.e., by kinship terminology, presence of cross-cousin marriage, half-forgotten remnants of mythology, vague memories of marriage prohibitions, etc.). In Nagovisi, on the other hand, there is a living moiety tradition. The whole population is separated into *poreu* and *paramorun* groups. Marriages must be inter-moiety. When a *poreu* child is born an old *paramorun* woman christens it, and vice versa. There is similar inter-moiety ritual assistance on many other ceremonial occasions.

Poreu and *paramorun* are said not to be the *names* nor *totems* of the moieties; they are the spirits who founded the moieties and who continue to exert strong influence upon the lives of their human descendants. Both are *kobo'nara* (epigenous ancestral demons, equivalent to the motuna *kupuna*)—that extremely versatile species of demon which inhabited the earth before human beings, their descendants, were born, and who are responsible for most culture. During *kobo'nara*-times *paramorun* was a snake (*Boiga irregularis*, like the motuna *ha·ŋoro*); his wife was *poreu*. Later on *paramorun* was hacked to pieces by his wife's people, and his body decay dripped away until it became the ocean.[14] That mishap, however, did not appear to affect *paramorun's* continuity nor to discourage his matrilineal descendants from marrying descendants of *poreu*; in fact, the precedent set by his marriage to *poreu* has been faithfully adhered to ever since. His moiety descendants—like Adam's children-in-law, their derivation is not explained—continued to marry matrilineal descendants of *poreu* and came in time to populate all of Nagovisi.

The *poreu* now dwells in the Tave·ru River near Sirogana village, and *the paramorun* now dwells near Hiruhiru, but there are also separate *poreus* and separate *paramoruns*, one for every living descendant. "They are all the same," said one informant, "but the *paramorun* at Hiruhiru is over all the other *paramoruns*."

The Nagovisi *paramorun* is the linguistic equivalent of the Siuai *horomorun*.[15] Both *paramorun* and *horomorun* materialize in the form of the snake *Boiga irregularis*—which, it should be added, is only one of several kinds of local snakes. Both kinds of supernaturals are sometimes equated with thunder-and-lightning. Both are thought to be among the most powerful of demons. But there the analogies end.

During my stay in Turuŋom village (northeast Siuai) I once heard a great furore in the *mu·mi's* club-house. It transpired that while decrepit old Konkoma had been resting in the club-house he had seen a *Boiga* snake crawl across the ground. He cried out fearfully and said that he had seen a *horomorun* and would soon die. Natives discussed the event in hushed tones for a week, saying that they hoped that *they* would never see one.

Another time, while I was at Sirogana in Nagovisi, a very large *Boiga* crawled casually across the village clearing. One of my Siuai servants was obviously terrified, but with a show of bravado started after the snake with an axe. Our Sirogana hosts shouted for him to leave the creature alone: "It's merely *paramorun*, our brother." Later on, my frightened servant confided to me that: "These Nagovisi are insane; the *horomorun*-snake is a *mu·mi's* demon and very dangerous, yet these bushmen say he's a friendly clan spirit." Then he went on to add how incredible it was for people to be so naive as those Nagovisi, their practices being utterly incorrect!

Paramorun is the chief ancestral spirit of one moiety; it is *not* a totem. The totem of this moiety, the eagle, is said to be matrilineally descended from *paramorun* and to be, therefore, taboo to all *human* descendants of *paramorun*.

No sacrifices of any kind are made to *paramorun*, who is (or *are*—sometimes natives spoke of a single *paramorun*, at other times of the whole race of them) benevolently disposed towards all descendants and would punish them only in the event that they killed or ate eagle.

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[14] Elsewhere in southern Bougainville this role is credited to other mythological personages.

[15] Motuna initial "h" almost invariably changes to "p" in Sibbe (Nagovisi) equivalents, and "o" to "a": house = *howo* (motuna), *pava* (sibbe); fence = *horo* (motuna), *para* (sibbe); hunger = *hi·ro* (motuna), *pe·ra* (sibbe), etc.

Paramorun does not seek rapport with descendants, nor patronize wealthy, influential men. "Does each club-house shelter a *paramorun*?" I asked one informant. "Why, yes, of course," he answered, "*paramoruns* are in all places—that is, in all places where *paramorun* people (eagle-tabooers) live."[16]

Paramorun takes an active interest in the lives of descendants, especially infants, and although never sacrificed to nor petitioned, it helps to protect them against malicious demons.

To *paramorun's* main shrine at Hiruhiru the souls of its descendants go after death. (The soul is also said to go to the mountain lake; this inconsistency could not be resolved by informants, who—unlike myself—were not troubled by it.)

Summarizing briefly: there is in Nagovisi little or no emphasis upon wealth and social-climbing, and only a very rudimentary political organization. On the other hand, there is considerable emphasis upon totemic clans and moieties. *Paramorun* is looked upon as the epigenous ancestor and benevolent spirit-kinsman of all people who have the eagle for their totem, and as such is their chief supernatural. *Paramorun* is the linguistic equivalent of *horomorun* of the northeast Siuai area, materializes into the same kind of snake, and—as in Siuai—transforms itself into thunder-and-lightning.

Moreover, the single *paramorun* who resides at the moiety shrine is said to be chief of all the individual *paramoruns* distributed throughout the whole area.

WESTERN SIUAI

Eleven hundred of the motuna-speaking people live in western Siuai. Between northeast and west Siuai are slight dialectic differences—chiefly in vocabulary—but in environmental conditions, economic activities, and material paraphernalia the two regions are similar. For our purposes it is in the sphere of social organization that the most interesting differences occur: western Siuai, which is located geographically between northeast Siuai and Nagovisi, is at the same time something of a zone of transition for institutions.

In western Siuai matrilocality prevails more than in the northeast, less than in Nagovisi. Clans are more important than in the northeast, less so than in Nagovisi. There is less emphasis upon moiety organization; the several clans are looked upon as separate groups except in respect to exogamy. Members of the larger Eagle clan may marry into any other clan, but members of all the other clans may only marry Eagles. It is this Eagle clan which concerns us here because of its connection with *horomorun*.

Horomorun, along with three other demons,[16a] is the *kupuna* (=sibbe, *kobo'nara*) of the Eagle clan. Its shrine, like that of *paramorun*, is at Hiruhiru, whence all the Eagle clan ancestresses were derived. When an Eagle man or woman is married water is fetched from Hiruhiru for the ceremony; performance of this act assures the blessing of *horomorun*, omission of it brings down its wrath. *Horomorun* dwells there at Hiruhiru and appears to visitors—but only to Eagle clansmen visitors—in the form of an enormous *Boiga* snake. *Horomorun* also transforms itself into thunder-and-lightning.

Elders in the Eagle clan possess certain spans of shell money which were discovered by *horomorun* and which may not be used for ordinary purchases; failure to abide by this rule would anger *horomorun* exceedingly. (In northeast Siuai each matrilineage possesses its store of sacred shell money which is likewise said to have been discovered by *kupuna*—but not by *horomoruns*!)

Thus, to the Eagle clansmen living in western Siuai, *horomorun* is a *single* clan supernatural, strikingly similar to the primary Nagovisi *paramorun* and living in the same place.

Now, club-houses are almost as imposing here in west Siuai as they are in the northeast. Moreover, they are filled with slit-gongs which are kept continually sounding by active feast-givers. There is, in fact, almost as much an emphasis upon social-climbing, prestige, wealth, and leadership as there is in the northeast. Consequently, it was not much of a surprise for me to learn that with each leading *mu·mi* is associated a *horomorun*. But it *was* a surprise to learn how concisely the natives differentiate between the clan-*horomorun* and the *mu·mi-horomoruns*. Homonymy meant little to my informants: these were two different species of demon which *happened* to have the same name. Even my best local informant became impatient with me when I tried to obtain a rationalization from him about the "coincidence": "Why, [clan-]*horomorun* dwells at Hiruhiru and is merely *horomorun*, that's all. Those other *horomoruns* are *mu·mis*' demons."

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[16] The Nagovisi club-house demon is *domado'*—an equivalent of the motuna *roma*, which used to be invoked to assist warriors setting out on a raid. *Domado* might conceivably be equated with the motuna *horomorun* ((*ho*)*romoru*(*n*)) on purely linguistic grounds. This alternative, however, I believe to be untenable on the basis of other cultural and linguistic evidence. Cf. p. 62, footnote 34.

[16a] Konopia, Osooso, and Makunai.

This "coincidence" would be puzzling were it not for one clue suggested by the social organization. *Mu·mis* are plentiful in this region, and social-climbing is almost as important a preoccupation as it is in the northeast, but there is one important difference. In the northeast, clan and political institutions are nearly completely separate; a *mu·mi* attracts his adherents from among fellow-villagers and neighbors, no matter what their clan affiliations may be. Here in the west, the *mu·mi* remains distinctly a *clan* leader. Clan membership is more localized owing to the relatively greater importance of matrilocality, and men make a point of assisting a promising young clan-mate to accumulate property and prestige. Here, patrilineal succession is not even incipient. Moŋko, the leading *mu·mi* of the Eagles, explained their position to me very carefully:

> The Kiap [pidgin, for "cap" (?) = government official] is trying to start a new custom among us. He is trying to have the *son* of a *mu·mi* succeed him. That is not our method. With us a man becomes a *mu·mi* if he is capable of giving large feasts; and our clan-mates, not our fathers, assist us to give feasts. Before me *Rempo* was *mu·mi* here, before him *Mitak*, before him *Usira*—all Eagles like myself.

Now, in western Siuai there are almost as many Eagle clansmen as there are members of all the other clans combined, and most *mu·mi*—all of the leading ones and some of the lesser ones—are Eagles. This suggests—*suggests*, not demonstrates—that *horomorun* was, *de facto*, an Eagle clan (moiety?) demon, that he has, *de facto*, remained an Eagle clan demon since Eagle clansmen *mu·mis* control most of the club-house *horomoruns*, but that since *horomoruns* have become derivatively (?) associated with *mu·mis*, influential members of other clans have taken over the concept. There is, of course, almost as good a possibility that the development was the other way around; I am in no way convinced that *horomorun* was originally associated with a moiety—or, indeed, that moieties are the older organizations. Actually, this attempt at rationalization is a futile pastime among these natives with their shallow memories and their enormous capacities for paradox. What is significant in west Siuai is that clan and political institutions are both prominent, and that with each institution is an associated demon or class of demons called *horomorun*.

BANONE PARAMORUN

Along the southwest coast and inland from there up to the Nagovisi and Siuai borders[17] live the Banone Melanesian-speakers. They are obviously and admittedly intrusive; one tradition points back to Mono Island as a source; if that is so the migration must have occurred a long time ago, since present-day Mono and Banone vocabularies are very dissimilar. I have stated elsewhere that the tendency for the Banone is and has been to move inland. As a result of this gradual migration the Banone have lost many of the distinctive features of their cultural apparatus: the large graceful plank canoes (*mo·no*) are no longer constructed; coastal and inter-island[18] trading expeditions have ceased; pork has replaced fish in the food economy; etc. Moreover, Banone natives admit openly[19] that they have taken over feast-giving customs from the Siuai—that formerly their own club-houses were not so imposing nor their slit-gongs so numerous, nor their leaders (*pokiri*) so great.

There is a matrilineal clan institution, and nearly all the Nagovisi and Siuai totems are represented. There is even a moiety tradition which closely approximates that of western Siuai—that is, it serves mainly to regulate marriages. Moreover, the spirit ancestor of the Eagle moiety is said to be *paramorun*, which—like the Nagovisi and west Siuai equivalents—has its shrine at Hiruhiru, changes into the *Boiga* snake and into thunder-and-lightning, etc.

Each important leader entertains a *paramorun* in his club-house; but when I sought further information on this point I was told by Banone informants: "*paramorun* he all same *horomorun* belong all Siuai; mefella behindim fashion belong Siuai." (Our *paramorun* is like the Siuai *horomorun*; we simply took over their custom.) Of course, a statement like this is not at all reliable or conclusive, but I believe it is significant that the Banone natives living along the Empress Augusta Bay were vague and puzzled about the concept, whereas those living inland near Siuai and Nagovisi were not.

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[17] "Border" is used here only figuratively—strictly speaking, there are no definite political nor language borders in southern Bougainville.

[18] Inter-island trading has likewise ceased for those who remained on the coast, after the World War Bougainville was severed politically from the other Solomon Islands, and customs barriers imposed.

[19] Usually, natives in this area are very loath to admit that they have borrowed customs—especially feast customs—from others. I regard this admission as being fairly reliable; it would have been much more natural and satisfying for them to have held the reverse to be true.

TEREI OROMURUI

The seven thousand Terei natives live in much the same kind of physical environment as the Siuai. The *ru·gara* (Terei) and motuna (Siuai) languages are strikingly similar.[20] My impression gained by measuring hundreds of Siuai and Terei natives is that no significant racial differences exist between them; but, of course, this will have to remain merely an impression until the anthropometric data have been analyzed.

Cultural differences between the two areas do, however, exist. Many of these I believe can be attributed to the proximity of the Terei people to Alu Island. This fact has led Thurnwald—the authority on Terei, from whose works much of the following information has been drawn—to reconstruct a rather spectacular picture of the history of this region. Briefly, this history is as follows:[21]

> The aboriginal population resembled physically and culturally that of the present-day Nagovisi area. That is to say that physically they were short-statured, prognathous, etc., and culturally they were organized mainly into matrilineal totemic groups with only slight emphasis upon any kind of political organization. Then, a few hundred years ago, bands of Melanesian-speaking sailors (from Alu, Mono, New Georgia, and perhaps ultimately Indonesia) conquered the aboriginal Terei and reduced them to slavery. They (the conquerors) introduced—among other things like head-hunting, pigs, coconuts, shell money, etc.—a feudal-like political hierarchy with themselves the absolute masters and owners of all the land. They instituted a patriarchal type of kinship organization with patrilineal succession and inheritance, and succeeded in all but effacing the older matrilineal totemic clans.

Political organization among these Terei is, indeed, more complex than in the neighboring Siuai area, but Thurnwald's explanation for it is, I firmly believe, quite overdrawn. His preoccupation with migrations of conquerors is in line with similar preoccupations of W. H. R. Rivers, but one need invoke no actual conquest by a "superior race" to account for the development of chieftainship here;[22] trade contacts with Alu Islanders could just as well have served to introduce the material objects and standards of value favorable for such an evolution. Of course, occasionally, Alu Islanders undoubtedly did settle among the Terei (and among the Siuai[23] as well), but to go further than that seems to me gratuitous.[24] A full argument for my view will be presented elsewhere, but it seems to me that external trade served to emphasize wealth in shell money, pigs, etc., and that this led to a weakening of matrilocality and the matrilineal bias and a strengthening of patrilineal political ties. This, at least, is the process which is now taking place further to the west.

Frau Thurnwald draws attention to the disintegration of clan totemism, and says that the only evidence of matrilineal clan totemism to be found today lies in the inheritance by children of their mother's totem, and in certain marriage prescriptions. And that is all.[25]

The political institutions, on the other hand, are so highly organized and ritualized that Thurnwald describes them at great length. He speaks of "the traditional ethnic stratification,"[26] with *múmira* (-motuna *mu·mi*, sibbe *mu·miako*) families at the top. "These families are inter-related, and constitute an aristocracy."[27] Under them are their bondsmen (*kítere*=motuna *kitoria*, children). "The *múmira*, members of the chief's stratum, claim the ownership of pigs and *ábuta* [shell money] for their class, just as the pastoral tribes in Africa do with regard to cattle. They treat the 'bondsman' as the warden of the domestic animal."[28] "The *múmira* family claims all the land of the district. This land is divided up for usufruct among its adult male members and is inalienable. Moreover, each *múmira* owns a number of *kítere* families; a big chief several dozens, a smaller one (second or third line) perhaps half a dozen, or one or two dozen. The head of each *kítere* family has received part of the land belonging to his *múmira*, transmitted perhaps from his ancestors. The *kítere* may sell the land if his *múmira* agrees. If a *kítere* family should die out, the land reverts to the *múmira* to be disposed of as he wishes."[29]

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[20] Verb syntax is almost identical, and a great many differences in vocabulary can be resolved merely by applying certain regular phonemic changes (motuna "k" and "p" to ru·gara "g" and "b," loss of motuna initial "h" in corresponding ru·gara words, etc.).

[21] This summary is compiled from several of Thurnwald's works, titles for which will be given below.

[22] The sea-going Melanesian Banone whom Thurnwald would probably also rate as "superior" are moving inland into the Siuai area. But far from constituting an aristocratic class in those places where they are in contact with Siuai, they are actually taking over Siuai concepts of leadership—relatively ineffectively, I might add. Not one of their leaders is to be compared in authority with the leading Siuai *mu·mis*.

[23] Alu natives seem to have been more active in trade with Terei, whereas Mono Islanders traded with Siuai.

[24] This view is shared by Father Poncelet who has lived among and studied these natives for over 20 years.

[25] Thurnwald, H., 1934, p. 146.

[26] Thurnwald, R. C., 1934, p. 134.

[27] Thurnwald, R. C., 1934, p. 125.

Thurnwald then goes on to state that the main obligation of *kítere* nowadays is to raise pigs for their *múmira*, to assist him clear ground for garden work, to help him repair fences and build houses. Particularly must he assist his *múmira* in the erection of a club-house (*abacio* = motuna *ka·poso*). And "the *kítere's* daughters will help the *mumiána* (chief's wife) in garden and house work, and they are chosen to contribute to the men's pleasures when a big feast is going on. All these services, however, including the last, are remunerated, either by meals of pig or by *ábuta*."[30]

After this brief sketch of the political institution we can return to our main purpose: to discover parallels to the *horomorun* concept. Information on this point is immediately forthcoming from the account of R. C. Thurnwald:

> The main obligation of the *kítere* in the old times was to support his *múmira's* enterprises in warfare, and particularly in head hunting to offer the skulls to the personal war-god (*orómrui*) of his chief, as his "ghost *kítere*."[31]

That "*orómrui*"[32] is equivalent to the motuna *horomorun* is patent.[33]

Thurnwald describes *orómrui* as being personal war-gods of the chiefs. All those whom the chief or his followers slay and whose skulls are deposited in the club-house are believed to serve as "bondsmen" to the *orómrui*. In northeast Siuai, it will be recalled, lesser demons rather than ghosts of slain warriors serve his function.[34]

The *orómrui* is said to be "so tall that his head reaches up to the clouds."[35]

> The club-house was a powerful symbol of his [the *múmira's*] authority, because it was believed that the *múmira's* personal war-demon, his *orómrui*, stood upright before the main front post. This *orómrui* stood with his face in the clouds and consequently was never seen. Whoever did see it died. In order to secure the support of his *orómrui*, the chief must present him with the skulls of followers, which then became demon-followers. For, as so often happens, the supernatural world was believed to resemble the real world.[36]

Orómurui is a far cry from the friendly, benevolent Nagovisi *paramorun*. In both places the demons are associated with thunder-and-lightning, but see what a difference there is:

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[28] Thurnwald, R. C., 1934, p. 125.

[29] Thurnwald, R. C., 1934, p. 125. Thurnwald prefaced the above statement with: "The relations between *múmira* and *kítere* are not exactly the same in each region of Buin. Nevertheless general principles can be ascertained for the whole area."—I made an intensive study of land tenure in northeast Siuai and had occasion to examine the tenure situation in the adjacent northwestern Terei area. I discovered that matrilineages are much more important land owning groups than Thurnwald had indicated, and that the practice of identifying land with *múmira* is, to some extent, metaphorical. For a full account see my *Siuai Land Tenure*.

[30] Thurnwald, R. C., 1934, p. 126.

[31] Thurnwald, R. C., 1934, p. 126.

[32] My own recording of this term was *oromurui*, as was Wheeler's (1926), and Chinnery's (1924, p. 114). I shall, throughout, retain Thurnwald's spelling when quoting from or paraphrasing his accounts.

[33] Very common sound changes are involved (pig = *hu·ru* (motuna), *u·ru* (ru·gara), hair = *hi* motuna), *i* (ru·gara), taro = *hame* (motuna), *ame* (ru·gara), etc., loss of motuna final nasal in ru·gara equivalents is also very common); and the supernatural roles of the demons are too similar to be purely coincidental. Bilingual informants (speaking motuna and ru·gara) also asserted that they are equivalent. This, by itself, is not thoroughly convincing; in general, natives are very indifferent etymologists.

[34] There is in Siuai a separate class of spirits with roles somewhat analogous to this particular function of *oromurui*. They are called *romanopo* (*roma* = fight, *nopo* = plural person suffix: "fight-people"). Before setting out on a raid a shaman divines which ones of the enemy are to be slain. Ghost *romanopo* bring the souls of future victims to the seer, who recognizes them and instructs his fellows which of the enemy to kill. All men slain in this way have their skulls preserved in their killers' club-houses, but their ghosts *do not* serve the *horomoruns*; rather, parts of the victims ears are cut off and sacrificed to the *romanopo* to stimulate these latter in their task of fetching souls of more intended victims. When a war-shaman dies, his ghost becomes one of the *romanopo*.

[35] Thurnwald, R. C., 1934, p. 139.

[36] "Die Halle war ein wichtiges Symbol seiner Macht, denn vor dem vorderen Hauptpfeiler stelle man sich den persönlichen Kriegsdämon des Häuptlings, seinen *Orómrui*," aufrechtstehend vor, der mit seinem Gesicht in die "Wolken ragte, und das deshalb nie zu sehen war. Wer es blickte, musste sterben. Um die Unterstützung seines *Orómrui* zu gewinnen, brachte ihm der Häuptling Schädel von Hörigen dar, die so sein Damonengefolge wurden. Denn die Geisterwelt wurde, wie sehr häufig, nach dem Modell der realen Welt ausgemalt." Thurnwald, R. C., 193–?, p. 7.

> *Orómrui* or *umiai*[37] the Thunderer is greatly feared in Buin, and is identified with the white bellied sea-eagle. It is said that during the night this creature strikes at a chief, tears out his soul and throws it onto the ground with a crash. Later on one finds the soul in the shape of a dead bird—of a hornbill if the victim was a chief, or of a parrot or a dove. At night time no one dares utter out loud the name of the demon for fear that it will hear its name spoken and turn up, for the *orómrui* does not limit its activities to chiefs. One never sees the *orómrui* itself—only its light. The direction in which the light moves indicates the place of residence of the intended victim.[38] After seeing such a light people find a dead bird somewhere in the neighborhood. Natives represent *orómrui* in the form of a hair comb, that is to say of a "Kammstern"; and they distinguish between lesser and greater *orómrui*. The latter kind is identified with thunder, lightning, bolides, and meteorites.[39]

In another place[40] *orómrui* is described as a culture hero ("Held der Vorzeit"). This recalls the *paramorun*, the equivalent Nagovisi demon; Thurnwald does no more than mention this aspect of *orómrui*, nor was I able to discover any more information during interviews with Terei natives.

Thurnwald does not state whether or not *orómrui* can take the form of a snake; a native from northwest Terei told me, however, that the demon often changes into an *ayoro* (=motuna *ha·yoro*, *Boiga irregularis*). There is also corroborative evidence from Wheeler's book.[41]

> *Oromurui*—This name is not to be mentioned without occasion . . . (if you wish to utter the name you shall give a pig: if you utter the name without grounds you will die today: if you use the name today you will die before many days are out: when you utter it you will die). This, of course, refers to Buin. *Oromurui* is the Telei name. In Sirifi [Nagovisi] and Malafe [Siuai] there is a different one which is the same for these two districts.
>
> *Oromurui* is a snake or is a *nitu* (*tiong*) [=spirit in the shape of a man] as he wishes.
>
> . . . (If O. [*Oromurui*] wishes he becomes a snake, if he wishes he becomes a man, a *nitu* if he takes the snake-shape, men can see him: if he takes the shape of a *nitu* or man, men cannot see him.)
>
> When he is a *nitu* he will have the appearance of a man.
>
> There is an *Oromurui* in each chief's *kalofo* [club-house in the mono-melanesian language, = motuna *ka poso*, ru gara *abacio*.] . . . (they give him pig: *Oromurui* belongs to the chiefs).

Thurnwald mentions that social-climbing does take place:

> It should be borne in mind that people promote their acquisition of wealth by using rational calculations of an economic nature. They do it consciously and intentionally, incited thereto by the desire to improve their social position. This process, by which the influence of the hereditary aristocracy was countered by the existence of classes of people who, although they are not *múmira*, are important in virtue of their wealth, arising out of their skill in carrying on exchanges with profit and success. On the other hand a *múmira* who has failed in his enterprise of raising pigs (perhaps on account of an inefficient wife, obstinate *kitere*, or bad luck) and of acquiring enough *ábuta* [shell money] to finance feasts, loses his authority over his *kitere* and his social prestige. In this way the established stratification of society has, in the lapse of time, become disturbed and the principle upon which it was founded has shifted.[42]

Again:

> There are innumerable occasions on which "sacrifices" are given to "feed" *Orómrui*, the *oliga* ghosts, the *mara* demons, etc., for food is believed to invigorate members of the spirit world just as it does man; and, like mortals, ghosts and demons are also anxious to maintain their renown.[43]

Putting together these statements it would seem that there might be a correspondence between prestige of *múmira* and vigor of *orómrui*, just as there is in Siuai. This, however, must remain an inference; in none of Thurnwald's accounts available to me was the correspondence made explicit. Nor is it mentioned that *orómrui* seek rapport with social-climbing *múmira*, nor withdraw patronage from a socially declining *múmira*.

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[37] In northeast Siuai *umiai* is distinct from *horomorun*. When a *mu·mi* is dying his soul (*ura*) is transformed into a bolide (*umiai*) which flies to the *mu·mi's* clan shrine.

[38] This role of the Terei *oromurui* corresponds to a separate Siuai creature, *ri·po*.

[39] "*Orómrui* oder *úmiai* der Groller—wird in Buin besonders gefürchtet und mit dem *mánugau*, dem Weissbauchseeadler zusammengebracht. Es heist: des Nachts stürzt er sich auf Hauptlinge, reisst ihnen die Seele aus, wirft sie unter Krach zu Boden. Man findet sie dann in Gestalt eines toten Vogels, z. B. eines Nashornvogels für einen Häuptling, oder eines Papagei's oder einer Taube. Den Namen dieses Himmelgespenstes wagt man bei Nacht nicht laut auszusprechen, sonst konnte es seinen Namen hören und kommen. Denn auch anderen Menschen reisst *orómrui* das Herz aus dem Leibe. Man sieht ihn selber nicht, nur sein Licht. Die Richtung, in der dieses sich bewegt, zeigt den Ort an, wo der Mensch, den er holt, sich aufhalt. Nachher findet man irgendwo einen totem Vogel. *Orómrui* wird von allen Gespenstern am meisten gefurchtet. Man bildet ihn als Steckkamm . . . =Kammstern ab und unterscheidet einen „kleineren" und einen „grosseren" *orómrui*. Letzterer wird ausser mit dem gewöhnlichen Donner offenbar mit dem Kugelblitz, Leuchtkugeln (Boliden), niederfallenden Meteoren und dgl. zusammengebracht." Thurnwald, R. C., 19–?, p. 337.

[40] Thurnwald, R. C., 19–?, p. 337.

[41] Wheeler, 1926, p. 261. This account of Wheeler's was recorded in the Mono language, the passages herein cited are his own literal translations.

[42] Thurnwald, H., 1934, p. 132.

[43] Thurnwald, H., 1934, p. 140.

Comparative data can be summarized in part on the following table:

Nagovisi	Western Siuai	Northeast Siuai	Terei
paramorun	*horomorun*	*horomorun*	*oromurui* (*orómrui*)
snake (sp. *Boiga irregularis*)	snake (*Boiga irregularis*)	snake (*Boiga irregularis*)	snake (*Boiga irregularis*?)
Association with Eagle	Association with Eagle		Transformation into white-bellied Sea Eagle
Thunder-and-lightning	Thunder-and-lightning	Thunder-and-lightning	Thunder-and-lightning, bolide, meteorite

Unless all the above similarities can be explained as coincidences—which seems to me unlikely—*paramorun*, *horomorun*, and *oromurui* can be regarded as constituting the same mythological phenomenon. In Nagovisi, Siuai, and Terei the creature is *the*—or one of the—most important demons (never a ghost); furthermore, it "participates" actively in native life—is not regarded as an otiose being. These considerations form the basis for comparison. However, the main purpose of this paper has been to describe and account for *differences* in the various regional manifestations of the phenomenon.

In Nagovisi, where clan and moiety totemic groups comprise the most "important" (as above defined) institutions, *paramorun* is regarded as the chief supernatural of the Eagle moiety. As such, it is an ancestor, a kinsman, and is treated with the friendly respect shown to a kinsman. One need not sacrifice to it nor fear it in order to win its patronage or escape its wrath.

In addition to there being a single moiety ancestor-*paramorun* which dwells at the moiety shrine, there are large numbers of lesser *paramoruns* distributed around the countryside, one for every human moiety-mate.

In western Siuai, where totemism and political institutions are about equally "important," there is a single *horomorun* affiliated with the Eagle clan (moiety?) in almost identically the same way as in Nagovisi, and there is also a *horomorun* in the club-house of each prominent leader.

In northeastern Siuai, where political organizations overshadow totemic clans, *horomoruns* are not affiliated with clans; they are associated rather with political organizations, with social-climbing leaders. As each social-climbing leader gains followers and prestige, his *horomorun* increases *its* following and ferocity. In keeping with the ideology of aggressive social rivalry, the *horomorun* is a fierce and aggressive collaborator in its human host's affairs. In its snake transformation it is dangerous; in its thunder-and-lightning transformation it is ominous.

In Terei, where clan totemism is said to have disintegrated but where political stratification is said to have become perpetuated in classes, *oromuruis* are associated with chieftains. And since the chief is said to have been *born* an aristocrat, there is no reported correspondence between *oromurui* and social-climbing. Rather, the *oromurui's* are personal war-demons of leading members of the aristocracy. And, whereas in Siuai *horomoruns* feed on the blood of pigs slain for social-climbing, in Terei *oromuruis* are rewarded with the ghosts of men slain in fights. Finally, when the terrifying, war-demon *oromurui* materializes, death and destruction inevitably follow.

In conclusion, it has not been my intention to outline a theory of social evolution for this area. To be sure, it would be most satisfactory to be able to state that Nagovisi, western Siuai, northeastern Siuai, and Terei represent—in that order—four progressive stages in cultural development. Unfortunately, conclusive proof for such a theory is not available. My intention has been rather to trace and document the transformation undergone by a mythological phenomenon in several cultural matrices. The derivation of the concept of *paramorun-horomorun-oromurui*, a powerful demon often identified with thunder-and-lightning and a particular snake, and sometimes with the eagle, is difficult to determine. There is no corresponding concept in present day Alu or Mono. Nor could I discover any reasonably exact equivalent in the Nasioi area which borders on Terei. It may have been derived from the intrusive Banone, but this, I believe, is not very likely; or it may have been indigenous—that is, as "indigenous" as such a phenomenon *could* be. And if indigenous, it may have begun as a moiety ancestral demon and evolved in places into a chief's personal war-demon; or the reverse might have occurred. One other possibility is that similarities throughout the region might be the result of convergences. My own preference in the matter is that the concept is very old—pre-Melanesian—in this region, and that its association with moieties and clans anteceded association with political institutions. But, all speculation aside, the significance of the *paramorun-horomorun-oromurui* concept lies in its vivid exemplification of the oft-stated generalization that people frequently model their supernatural worlds after their own institutions.

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VII

NOTES ON NORTHEAST AUSTRALIAN TOTEMISM

R. Lauriston Sharp

SINCE 1930 important additions have been made to our hitherto meager information on aboriginal totemism in the northeasternmost parts of Australia. In particular, the contributions of McConnel, Sharp, and Thomson outline the totemic cult patterns for several contiguous areas which together comprise a major portion of that part of Cape York Peninsula, North Queensland, which lies between the latitudes of twelve and fifteen degrees south.[1] While material on the totemism of many tribes in the remainder of the Peninsula and to the south is still fragmentary, confusing or lacking altogether, nevertheless, a survey of all available data shows that we may provisionally divide more than one hundred tribes of northeastern Australia into nine groups, each of which is characterized by a particular combination of totemic traits. The location of these groups and of the tribes included in each is given on the accompanying map 4. The distinctive features of the totemic organization in the different areas, which will be named for some typical tribe, may be described in summary form.[2]

TYPES OF TOTEMIC ORGANIZATION

I. **Kauralaig Type.** Tribe: 1) Kauralaig, the southernmost of the Western Islanders of Torres Strait, the Moa Islanders not being considered here.

Totemic organization: Totemism centers entirely around patrilineal localized named totemic clans regulating land tenure and associated with a single totem on which there is a tabu; a person considers as his own the totems of his father's mother, mother's father, and mother's mother and sometimes other close kin, and may not marry an individual with these totems from his own island; mourning and initiation rites have reference to totems.

II. **Yathaikeno Type.** Extant tribes: 2) Kekoseno, 3) Yathaikeno, 4) Wotadi, 5) Nggamadi, 6) (Idj)Onyengadi, (Idj)Ebawudjeno, (Idj)Okara, 7) Adjinadi. Extinct tribes: Apokwi, Oiyamkwi, Alauikeno, and perhaps others.

Totemic organization: No named totemic moieties or sections; named patrilineal totemic cult clans, regulating land tenure and associated with multiple linked totems, mainly natural species, but including land and mythical ancestors; each individual associated after puberty with certain totems or totem-places of his mother's clan, such food or artifact totems being strictly tabu; absence of tabu on own patrilineal totems; totem centers apparently present but no adequate information on totemic control rites; group historical rites representing ancestral activities; suggestion of belief in individual spirit pre-existent in maternal clan territory associated with a person at conception.

III. **Koko Yao Type.** Extant tribes: 8) Kandju, 9) Koko Yao, 10) Yankonyu, 11) Ompela, 12) Yintjingga, 13) Koko Ompindamo, 14) Bakanambia, 15) Walmbaria, 16) Mutumui.

Totemic organization: Named patrilineal and apparently totemic moieties without named sections; named patrilineal totemic cult clans regulating land tenure and associated with multiple linked totems including land and mythical ancestors; association after puberty between each individual and certain totems or territories of the mother's moiety or clan, the food or artifact totems being strictly tabu; absence of tabu on own patrilineal clan totems; totem centers and control rites by group owning the site; group historical rites representing ancestral activities; individual spirit, apparently not pre-existent, associated with maternal territory during life, returning at death.

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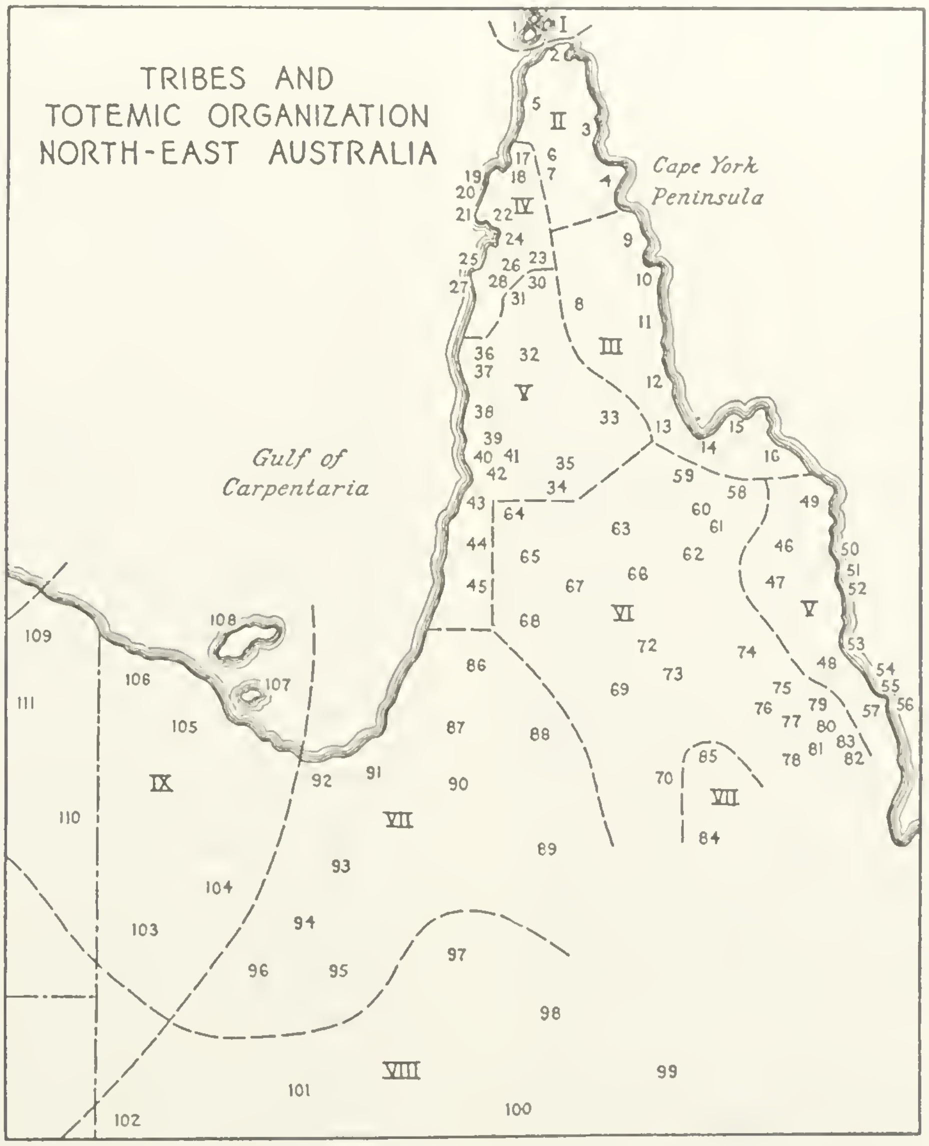
[1] Pertinent material from the reports of these authors is conveniently reproduced in Frazer, 1937, pp. 188–243.

[2] The summary here presented is based primarily on information gathered in the course of field surveys which I conducted during 1933, 1934, and 1935 under the auspices of the Australian National Research Council. All other known sources of information pertaining to the region have also been drawn on in order to make the study as complete as possible. The preparation of these data has been aided by a grant from the Trustee-Faculty Committee on Research of Cornell University.

The manuscript upon which this summary is based will be published elsewhere, since a detailed documentation of the data for each area has proved too bulky for a publication of this kind.

All known tribes in the region are listed, but limitations of space forbid a discussion of this ennumeration or a comparison with tribal terms previously mentioned in the literature. A few of these tribes are untouched by foreign influences, but many of them have undergone both foreign and inter-tribal acculturation, and some have become extinct. The transcription of native terms follows a modification of the system used by *Oceania*, published by the Australian National Research Council, Sydney.

IV. **Tjongandji Type.** Representative extant tribes: 17) Ngathokadi, 18) Tepethiki, 19) Tjongandji, 20) Yop'ngadi or Nggerikadi, 21) Wimarango, 22) Ngwatangeti, 23) "Kauwala," 24) Lenngeti, 25) Mamangeti, 26) Latangeti, 27) Anda'angeti, 28) Aditinngeti, 29) Wik Alkina or Wik Natera.



Map 4. Northeast Australia, tribes and totemic organization.

Totemic organization: No named totemic moieties or sections; named patrilineal totemic cult clans regulating land tenure and associated with multiple linked totems including land and mythical ancestors; tabu on clan totems absent or weak; totem centers and idea of totemic increase present, but no adequate information on control rites; group historical rites representing ancestral activities; in at least one tribe (19) patrilineal totemic spirit or spirit-stuff pre-existent in clan land associated at conception with each clan member, returning at death to clan land.

V. **Yir Yoront Type.** Tribes: 30) Kok Mbewam, 31) Kok Ialа, 32) Wik Munkan, 33) Aiabado, 34) Aiakampana, 35) Aiabakan, 36)

Wik Me'ana, 37) Wik Natanya, 38) Wik Ngantjera, 39) Ngantja, 40) Ngentjin, 41) Taior, 42) Yir Yoront, 43) Yir Mel, 44) Koko Pera, 45) Koko Papung, Koko Paperam, 46) Koko Bididji, 47) Koko Yerlandji, Koko Walandji, Koko Buyadji, 48) Koko Moloroidji, 49) Koko Yimidir, Koko Yimidji, 50) Koko Yalunyu, 51) Koko Yalyu, 52) Koko Yalung, 53) Tjabokai, 54) Niakali, Bungkol, Tjangkir, 55) Yirkandji, 56) Kungandji, 57) Yidindji.

Totemic organization: Named totemic patrilineal moieties without named sections; named patrilineal totetemic cult clans regulating land tenure and associated with multiple linked totems including land, mythical ancestors, and a great variety of other phenomena; strict moiety totem tabu in most tribes, but tabu on clan totems ordinarily absent; totem centers and control rites by individual or group owners of sites, in some tribes without regard to affiliations of the totem regulated; group historical rites representing ancestral activities; individual totemic spirit pre-existent in clan and associated at conception with each clan member, at death returning to clan land in some tribes, while leaving the region completely in others.

VI. **Olkol Type.** Tribes: 58) "Koko Wara," 59) Aku Laia, 60) Aku Rarmul, 61) Aku Nienga, 62) Koko Mini or Akunkun, 63) Olkol, Okekol, Okuluan, 64) Oikand, 65) Okundjain, 66) Okangkol, 67) Okaurang, 68) Koko Daua, 69) Okuntjel, (? extinct) Okurin, 70) Takalak, 71) Wamin or Walamin, 72) Okenyika, 73) Tjapatja, 74) Wakura, 75) Tjankun, 76) Waniura, 77) (Um)Barbarem, 78) Tjulngai, 79) Mutju, 80) Ngaikungo, 81) Tjirbal, 82) Mamu, 83) Ngatjan.

Totemic organization: Named totemic patrilineal moieties, each including two named sections not totemic in themselves; named and unnamed patrilineal totemic cult clans regulating land tenure and associated normally with multiple linked totems, including land and mythical ancestors; strict tabus on moiety totems but ordinarily none on clan totems; totem centers and control rites by individual owners of the sites; group historical rites representing ancestral activities; individual totemic spirit pre-existent in clan land associated at conception with each clan member, leaving region completely at death.

VII. **Okerkila Type.** Tribes: 84) Koko Patun, 85) (Ak)Waumin, 86) Kundara, 87) Kunggara, 88) Aripa, 89) Ambara, 90) Okerkila, Walangama, 91) Kutanda, Kurandi, 92) Kukatja, 93) Maikudan, 94) Maikulan, 95) Maiabi, 96) Workabunga.

Totemic organization: Unnamed patrilineal moieties indirectly associated with totemic complexes of constituent patrilineal clans; four named sections are non-totemic; named totemic patrilineal cult clans regulating land tenure associated usually with multiple linked totems, including land and mythical ancestors; eating and killing tabus on own and mother's clan totems present in the east, but absent among most western tribes; totem centers and control rites; group historical rites representing ancestral activities; individual totemic spirit pre-existent in clan land associated at conception with each clan member.

VIII. **Maithakudi Type.** Tribes: 97) Ngauan or Ngauangan, 98) Wawmin, 99) Yirendali, 100) Unamura, 101) Maithakudi, 102) Kalkadun.

Totemic organization: Named totemic matrilineal moieties, each including two named sections not totemic in themselves; probably totemic matrilineal clans; patrilineal totemic groups, apparently unnamed clans or patrilineages, regulating land tenure; multiple linked totems for both matrilineal and patrilineal groupings, with natural species predominating, and an eating tabu on matrilineal totems; only reported ceremonies are group initiations; information on ancestral mythology and other traits lacking.

IX. **Laierdila Type.** Extant tribes: 103) Indjilindji, 104) Ngoborindi, 105) Yukala, 106) Yangkala, 107) Bentinck Islanders, 108) Laierdila, 109) Eastern Karawa, 110) Wanyi, 111) Kunindiri. Extinct tribe: Minkin.

Totemic organization: Eight named subsections organized as unnamed totemic patrilineal moieties and semi-moieties; no named clans, but vaguely totemic unnamed patrilineages regulating land tenure; totemic groups have multiple linked totems, including land and mythical ancestors; eating and killing tabu present in most tribes; totem centers with control rites by individual site owner or others; group historical rites representing ancestral activities; belief in spirit baby conception not integrated with totemic system.

FORMS OF TOTEMISM

No evidence has been presented for the existence in northeastern Australia of *sex totemism*, the association of totems with each of the two sexes. It should be recognized that this type of totemism may easily be overlooked by investigators.

Information on *individual totemism* is so inadequate that no reference has been made to it in the preceding survey.

Patrilineal cult totemism is found among all tribes considered with the possible exception of those in Areas I and VIII. In totemism of this kind, patrilineal segments of the society, patrilineages, clans, phratries, semi-moieties, or moieties, are each associated with a totemic complex which includes totems, countries, ancestors, rites, myths, and personal and group names.[3] Membership in such totemic cult groups may be patrilineal only in the sense of descent through a patrilineal classificatory kinship line, membership in a particular clan or other group within this line being variable as regards real or close father and child. It can be demonstrated that totemic groups of this kind are primarily cult groups or ceremonial associations.

Maternal cult totemism, found in Areas II and III with traces elsewhere especially in the east, is a variant type associated with patrilineal cult totemism both here and in some other parts of Australia.[4] Besides the relationship to his own patrilineal totemic complex or complexes, the individual is also related to particular elements of the patrilineal totemic complex of his mother, this association not being handed down by him to any descendants.

Matrilineal social totemism, in which matrilineal segments of the society, moieties, and presumably clans and matrilineages, are associated with particular totems and totemic names, but not with land nor with cults centering about mythical ancestors or heroes, is found in Area VIII. This type of totemism seems to be particularly concerned with emphasizing the solidarity of the matrilineal groups of kin.

There is no evidence that either *section* or *subsection totemism* as such exists in northeastern Australia, although two sections together may constitute a totemic moiety (VI, VII, VIII) and two subsections a totemic semi-moiety (IX).

It should be recognized that these various types of totemism may exist together in one community.

NATURE OF TOTEMS

In northeastern Australia the phenomena which may legitimately be subsumed under the general term "totem" are tremendously varied and cover a wide range of things, activities, states, qualities, and ideas. This has been noted for some other parts of the continent but has never been properly emphasized. In some areas in the northeast floral and faunal totems appear to predominate, but in those regions which have been investigated more thoroughly, particularly in the Peninsula, it has been found that totems are by no means limited to species of animals, plants, and other natural phenomena but include such abstract concepts as sexual passion, adolescence, various diseases, swimming, copulating, making a spear, vomiting, colors, psychological moods, heat and cold, and so on. Numerous, too, are such substantives as corpse, ghost, child, ritual paraphernalia, and other cultural artifacts. It appears that a totem may be any enduring element of the physical or mental environment, either unique conceptual entities, or, more frequently, classes or species of things, activities, states, or qualities which are constantly recurring and are thus considered to be perdurable.

Mythical ancestors, both anthropomorphic culture heroes and theriomorphic beings, are commonly regarded as totems; the same term may be applied both to conventional totems and to ancestor totems. More important sociologically is the fact that the individual named countries into which the land is everywhere divided are also commonly regarded as totems, each being considered an identity which has existed unchanged since the time of the mythical ancestors. The term for totem is applied to countries in many tribes; an individual will name countries in a list of his totems; totemic, personal, and group names are derived both from conventional totems and from territories; countries, like other totems and ancestors, may be represented in totemic rites; and attitudes and behavior towards countries, as in mourning avoidance, for example, may be of the same kind as attitudes and behavior towards other totems. We are thus led to admit the concept of place as totem, and to allow place-totems and ancestor-totems to stand with other previously recognized totemic forms.

RELATIONSHIP TO TOTEMS

Personal names, of which the individual usually has several, are derived from various aspects of the group totemic complex with which the person is associated. This seems to indicate a special but rather vague relationship between the person and these particular totemic phenomena, although ordinarily throughout life the individual assumes no special attitude towards these as distinct from other aspects of his group's totemic complex. Individual or joint proprietorship of land, everywhere regulated by patrilineal succession normally within the patrilineage of blood kin, also relates the individual to particular elements of his group's totemic complex.[5] Control of land gives control not only of natural resources but also of totemic resources, so that the proprietor is responsible for totemic ceremonies associated with his land even though these rites may have reference to totems not included within the totemic complex of the individual's group.

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[3] See Elkin, 1933, p. 123.

[4] Elkin, 1931, p. 59, where it is termed "matrilineal."

Totemism in this region may involve the dichotomy of things, activities, times, places, and persons into those which are sacred and must be dealt with very carefully and those which are profane. Eating and killing tabus on edible group totems are invariably associated with maternal cult and matrilineal social totemism. Tabus are more variable in connection with patrilineal cult totemism, being present more commonly for moiety than for clan totems. Many of these tribes do observe mourning tabus in which certain surviving kin must avoid not only edible or useable totems for which the deceased was named, but also all countries of which he was individual or joint proprietor, the tabu including the substitution of a special mourning term for the names of these totems and place-totems. The idea that totems may bring luck seems to be poorly developed, although it is a common feeling that greater luck befalls a person in his own totemic countries than elsewhere.

The prohibition of marriage between a person and a member of his mother's clan, here called maternal clan exogamy, is frequently thought of as a totemic tabu. One tribe (VII-85) in an otherwise patrilineal area enforced a tabu on all the mother's patrilineal totems, and further investigation might reveal such maternal clan tabus to be more widespread, and perhaps related to the developed forms of maternal cult totemism.

Universal in the region is the totemic interpretation of dreams. Both patrilineal and matrilineal totems may be called "dreams" and totemic dream interpretation may be associated with all varieties of totemism found in the area.

Rarely does the investigator observe any feeling of identity between totemite and totem, and then only at the emotional peak of ceremonies in which the participant perhaps comes to feel that he is the totemic ancestor whom he represents and recreates, whose own name he bears, whose country he controls, whose songs he sings, and whose ritual paraphernalia he manipulates.[6] Totems, including ancestors and countries, may be incorporated into the kinship system, being referred to by a person as his father's father, brother, or other appropriate kinship term. This at once sets animate totems off from himself, the Ego of the kinship system, for if they are fathers or brothers they cannot be himself. The practice also raises difficulties in determining the proper generation of any particular specimen of the totem. It may also be noted that throughout the area dogs are included in both the kinship and totemic systems, being given names derived from the totemic complex of their masters. While a person may speak of his father's dog as his brother and consider him related to his own clan, this need not mean that he identifies himself with the animal nor extends any "principle of the equivalence of brothers" to include the dog in this case.

TOTEMIC SPIRIT BELIEFS

In all of the areas for which we have adequate information, except Area III and perhaps Area I, it is believed that at the beginning of time the mythical ancestors left inexhaustible supplies of spirit children in various places from which they emanate to be incarnated as living members of the society. Except in Area IX, the relationship of these spirits to countries, discovered either by divination or by the circumstances in which the spirit child is "found" at conception, demonstrates their association with related ancestors and the whole particular totemic complex of which ancestors and countries are a part. The individual is not a reincarnation of any ancestor or other totem; his relationship to ancestors is direct and social rather than genetic and biological, which makes it possible for a child and his father to have different ancestors. The individual's totemic spirit is not intimately linked with ritual objects such as *tjuringa.*

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[5] Roth, 1906, p. 9, says that on the Bloomfield River (V-50) a woman may bequeath her land to "her daughters or other female relatives." This is the only instance known to me in North Queensland in which proprietorship of land does not pass from a woman through her younger sisters to her brother's daughters or sometimes sons, real or classificatory. A woman's daughters and others of her female kin may have rights in the use of her countries, but they cannot control such land nor bequeath it.

[6] Compare the second chapter of Thomas Mann, 1934, in which Eliezer confuses and identifies himself with an ancestral Eliezer.

The fate of the personal totemic spirit is variable. In some tribes it returns to its totemic homeland, in others it removes to a distant land of the dead.

TOTEMIC RITES

In a sense all totemic ceremonies in this region are historical in that they were founded by the ancestors at the beginning of time and are sanctioned by pertinent sections of the community's whole totemic mythology. Both oral and manual rites are combined in these ceremonies.

Three varieties of totemic rites may be distinguished. Totemic *control rites* to regulate the quantity of totems are believed either to increase them or to inhibit, restrain, and check them, frequently through the regulation of the quantity of spirits or spirit-stuff allowed to emanate from sacred or nonsacred totem centers established throughout the region by mythical ancestors. The rites may be either for the benefit or harm of the community, depending upon the will of the operators and the kind of totems under their control. Totems thus regulated need not be of any obvious cultural value, though commonly they are. In the commemorative or *historical rites* the totemites, representing their totems, help to recreate the beneficent and sacred atmosphere of the ancestral times. It is commonly believed that the daily life of the community exactly mirrors the ordinary doings of the ancestors and that the invariably sacred historical rites, including the initiations, mirror their extraordinary doings, not only symbolically recreating the ancestors themselves but also all their practices and paraphernalia which are not found in the profane culture of the group. Totemic *mourning rites* emphasize the totemic affiliations of the deceased and of the surviving clansmen or moiety members. Their presence seems to be correlated to some degree with the belief that the dead's totemic spirit returns to its totemic homeland where it had resided since the ancestral epoch.

TOTEMIC IDEOLOGY

Totemism throughout northeastern Australia is a system of practices, sentiments, and beliefs which to a remarkable degree is integrated with the cultural life and physical environment of the aboriginal. The social groupings and cultural habits of the present are lent stability not only by the belief that they mirror the past, the sacred mythical world of the ancestors which provides an archetypical social and cultural pattern, but also by their formal relation to persistent elements of the physical environment, the countries and species of totems which have existed unchanged in time and space since the beginning of the world. The totemic system is a cosmological schema which interrelates stable and unstable elements of the entire aboriginal universe, things, groups, practices, ideas, into associated complexes in such a way that it becomes extremely difficult to change the system, either as regards the arrangement or character of the parts within the scheme or as regards the introduction of new elements from outside. Particular totems may or may not be of social value to the group, myth and ritual may or may not symbolize significant sociological or environmental phenomena; it is rather the entire system itself, once established, which is of fundamental importance in maintaining community life. Under aboriginal conditions this cosmological totemism, by its very universality, helps to prevent cultural change and to maintain social stability; but numerous examples show that a slight disarrangement of the rigid universal system through the impact of European ideas and practices is sufficient to demoralize not only the totemism but the entire society and culture of the aboriginal.

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VIII

CULTURE SEQUENCES IN MADAGASCAR

Ralph Linton

MADAGASCAR today provides ample evidence for the belief that there is no intrinsic or necessary relationship between language, culture, and physical type. The languages spoken on the island are singularly uniform. A person thoroughly familiar with any one of the native dialects can understand the speech of any native group, although he may encounter a few unfamiliar words or fail to catch exact shades of meaning. The cultures are less uniform but still have many basic elements in common. The native patterns of social organization and religion are fundamentally the same everywhere. There is considerable variation in technology, but even this is surprisingly small in view of the wide range of environments and natural resources which the island affords. It includes regions of dense tropical rain forest, temperate grassy uplands where winter temperatures fall below freezing, and one of the hottest and most arid deserts in the world.

In contrast with this linguistic and cultural uniformity, it would be difficult to find any other region which presented a greater variety of physical types. It is possible to distinguish not merely individuals but homogeneous groups with strong Caucasic or Mongoloid or Negroid affiliations, together with others whose characteristics are so mixed that they defy assignment of the group to any one of these main stocks. This diversity may be due in part to certain social factors. The basic unit of Madagascar society is everywhere an endogamous local group which rarely exceeds two or three thousand individuals and may number only hundreds. Under the combined influences of inbreeding, environmental selection, and social selection the members of such a group might readily come to constitute a distinct physical type. Even now the factor of social selection is strongly operative in some of these groups, infants who depart too far from the approved physical norm being put to death. Actually, the members of any one of these groups usually show a sort of "family resemblance" which makes most of them readily identifiable. However, the diversity of physical types is much too great to be accounted for by any theory of divergent local developments from a single originally homogeneous stock. Several racial strains must have gone into the making of the present Malagasy.

Since no other part of the world can show a mixture of racial types comparable to that of Madagascar in both the kind and apparent proportions of the various elements present, one is tempted to assume that the present blend must have been formed on the island itself. If so, Madagascar must have been reached by at least two groups of migrants who differed in physical composition and, in all probability, in culture. As will be shown later, we have excellent evidence for two migrations to the island within the last two thousand years, but unfortunately these migrations cannot account for the present racial situation there. Moreover, it seems certain that the island was already occupied at the time of their arrival. The key to our problem apparently lies in movements which were more remote in time.

The most direct evidence for such movements, that which might be provided by finds of ancient skeletons or implements in situ, is completely lacking. Archaeological work will be impossible in Madagascar for some time to come. All the native tribes, even those which have been nominally converted to Christianity or Islam, have an extreme respect for the spirits of the dead. While this attitude is strongest with respect to their own ancestors, non-ancestral spirits are also potent. When, as was frequently the case, one tribe expelled another from its territory and moved in, the new settlers respected the tombs and village sites of their predecessors and in time elevated their ghosts to the rank of genii loci. There is still a universal belief that to disturb these ancient spirits results in sickness and ill fortune of all sorts, and the French Government wisely supports the natives' objection to excavation. Except for a few ruins on the west coast which are obviously of Arab origin and probably do not date back farther than the fourteenth century, there are no structures known from the island which differ noticeably from those erected by historic tribes. The great stone chamber tombs of the Imerina are, they claim, a recent development, the first of them having been built during the eighteenth century, while the erection of menhirs is still going on among the Betsileo, Tanala, Bara, and various tribes of the southeast coast. Lastly, there is a striking absence of surface finds. In the central plateau I obtained a few hammer stones, large rubbing or grinding stones, and some perforated drill weights of a type still in use. However, no stone celts or chipped objects of forms sufficiently specialized to make their provenance as artifacts certain have ever been reported from the island and no bronze implements.

In the absence of more concrete evidence for migration we must turn to that provided by native traditions, by the distribution of certain groups of culture traits, and by the distribution of physical types. Practically all the present gentes have traditions of migration within the island and, in most cases, of the groups who occupied their present territory when they arrived. These traditions give a picture of extraordinary mobility, at least in certain regions. With the development of irrigated rice culture the Imerina and Betsileo, in the central plateau, had become fairly sedentary by the beginning of the historic period. However, the people of the east coast, who depended on the culture of dry rice by the cutting and burning method, and the people of the west and south, who relied largely on cattle, were constantly on the move. The island was so large and the population so sparse that a wandering village group, a gens, could drift through the territory of half a dozen other groups without conflict, finally settling again on unclaimed land or expelling some gens weaker than itself. Often a gens would even invite such wanderers to share their territory in return for aid against some enemy. Traditions of migrations are thus a great aid in explaining certain observed distributions of culture traits. For example, the presence on the southeast coast of a single tribe who weave in the center of a whole series of non-weaving tribes would be difficult to explain were it not for their own tradition that they came from the west coast, where they were originally a part of the Sakalava, and brought the art with them.

While we need not concern ourselves, except incidentally, with these traditions of movements within the island, some of them include accounts of extinct groups or phases of culture which seem to be highly significant to our study. Although traditional evidence must always be received with caution, I am convinced that these migration stories deserve more credence than most. Their tone is definitely historical, with a striking lack of supernaturalistic or marvelous elements, and the accounts which they give of groups whose cultures differed from their own are singularly direct and unimaginative. While the time bracket covered by these traditions is too short to throw much light on movements into Madagascar, they do illuminate some of the ancient conditions.

Perhaps the most striking of these traditions is that of the Tanala Menabe regarding the aborigines of their territory. The Tanala country is a region of steep mountains and heavy rain forest, one of the least desirable in the island. Even within the historic period it has provided a refuge for gentes driven from better lands on the coast or in the plateau. It is the sort of region in which, elsewhere in the world, archaic groups or phases of culture have survived long after their disappearance in the more accessible or desirable parts of their original range.

When the ancestors of the present Tanala entered this territory ten to fourteen generations ago, they found it already occupied by two groups who differed markedly from themselves in both culture and physical type. The southernmost of these groups, the Teroandroka, are said to have been very short and of slight build, like immature boys. Their skin was very dark, almost black, and they had short kinky hair, round faces, and round staring eyes. This peculiarity of their eyes seems to have been a striking feature, for informants usually mentioned it first in describing them. They lived by hunting and food gathering and had no fixed dwellings, but the only other fact remembered about their culture was that they had no gens totems. They were a timid, inoffensive people, who offered no resistance to the invaders and were finally absorbed by them. The Tanala gentes living in the old Teroandroka territory still include a few individuals who conform rather closely to the physical type described. They lack the extreme Negroid characteristics of African pigmies but could readily be mistaken for Oceanic Negritos.

The northern group of aborigines, the Zanakanony, seem to be much more clearly remembered. They were also short, the height of adult males ranging from five feet to five feet four inches, but were powerfully built with deep chests and heavy muscles. They were very light in skin color and had long wavy or at most curly hair. They lived in caves or in small lean-tos thatched with large leaves. Informants were uncertain as to whether they knew agriculture or had domestic animals but agreed that they lived mainly by hunting and food gathering and that they moved from place to place. They had neither chiefs nor slaves and lacked gens totems. They spoke a language intelligible to the Tanala.

By far the most interesting traditions are those regarding their technology. They are said to have had no iron, shaping their wooden implements with flakes of the quartz crystal in which the region abounds. These flakes were made by holding a large crystal on end and striking its top with a smooth river boulder. The best of the flakes struck off were selected and used until dull, then discarded. Naturally, rough stones were used for grinding and polishing. The long, straight pieces of palm wood from which their best spears were made were split from the trunks of fallen trees by means of stone wedges. Informants thought that they used natural stones for this but probably sharpened them in some way. Descriptions suggest a celt-like implement but unhafted. They were a peaceful people with no weapons except those used in hunting They employed unbarbed spears either plain or forked at the head, like fish spears. They lacked both the bow and the blow gun, but informants thought they had slings. The little clothing they wore was made from beaten bark. They had no pottery but cooked in bamboos or earth ovens. Lastly, they made fire with the bamboo fire saw.

These people no longer exist as a distinct group, but there are a number of modern lineages who claim descent from them. The members of these lineages seem to be somewhat more Caucasic in type than their neighbors with a higher percentage of light skins. All the Tanala shave but some of the men in these groups could have grown fairly heavy beards. Culturally, they differ from the other lineages only in that they have retained the art of making fire with the fire saw and in the unusually high status which they accord their women. When an outsider marries one of them it is specified in the marriage contract that the husband must not injure or dispose of any of the mats and baskets in the house, since these are the wife's property.

These traditions regarding the Zanakanony cannot be dismissed as idle inventions. They are much too matter of fact and specific. In particular, the descriptions of the manufacture and use of stone implements bear the earmarks of truth. It must be remembered that the immigrant Tanala have had iron for so long that they have no traditions of a time when they lacked it. Also, the use of the fire saw by these people is, as far as I can discover, unique in Madagascar. Its wide distribution among the more primitive Indonesian groups is too well known to require comment. It is conceivable that the Zanakanomy may have been a degenerate people who had lost agriculture, domestic animals, and settled life under the influence of an unfavorable environment, but no such hypothesis could explain their use of stone tools. The region in which they lived is rich in iron ore which is exploited by the present natives, while iron working has few esoteric or magical connotations among the other Malagasy. There is no distinct caste of smiths, as in certain parts of Africa, and knowledge of the techniques of both smelting and forging is widely disseminated. It is my belief that the Zanakanony were survivals of a pre-iron phase of Malagasy culture. Unfortunately, the caves in which they are said to have lived have all been pre-empted by the modern Tanala for burial purposes, so this conclusion cannot be proved for the present.

The Tanala are by no means the only group to have traditions of older populations whom they have displaced. All the tribes of the southern end of the island, below the plateau, tell stories of the Kimoso or Kimosy who once occupied their territory. These people are usually described as yellow skinned dwarfs and some of the early European visitors to this part of the island mention seeing dwarfs whom they took to be Kimosy captives. As we shall see presently, there is good reason to believe that the small size of the Kimosy was exaggerated by their enemies, but even today there are a good many dwarfs in this part of Madagascar. However, these are of the same blood as the present inhabitants. They are pathological dwarfs, like our own midgets, revealing the same infantile characteristics. In the Mahafaly tribe in particular the percentage of these dwarfs is so high as to suggest some hereditary tendency in the group. I was told that some thirty or forty years ago these little people were so numerous that they formed a midget village of their own, but I could never learn where this village was and am inclined to think it mythical.

The Antandroy and Mahafaly accounts of the Kimosy tend to be fantastic. Their conflict with them is referred to very ancient times and not much is remembered about them. The Mahafaly say that their women had no breasts and that their children had to be reared on cow's milk. If, as appears highly probable, the Kimosy were an Indonesian group, even this story may have a foundation in fact. The Mahafaly are a Negroid people and their women have large breasts which soon become pendant, while Indonesians in general tend to be small breasted. The Mahafaly also say that they used some peculiar missile weapon in the form of a cross, although they can give no further details. Actually, such a weapon has been in use among the Tanala and some of the neighboring tribes of the southeast coast within the memory of men still living. It consisted of two double pointed spikes of palm wood lashed together at right angles. It was thrown with an overhand motion and was highly effective at short range since it would curve inward on striking a shield and wound the man behind. The Mahafaly, who themselves fought with shield and spear, probably had good reason to remember it. This tradition is a good example of the grain of truth which usually lies at the core of any Malagasy story of old times.

As one approaches the plateau the stories about the Kimosy become increasingly detailed and matter of fact. The northern gentes of the Bara tribe can give the names and locations of a number of Kimosy villages and regard the group as anything but mythical. They say that the Kimosy were dwarfs less than five feet tall but heavily muscled and with enormous chests. Their great strength and quickness made them very dangerous in hand to hand fighting. Since the Bara themselves are an unusually tall and powerful people, the Kimosy can scarcely have been pigmies. A genuine contrast in height and build has probably been exaggerated in folk memory. The Kimosy are described as very light in skin color, "no darker than the Imerina," and as having long wavy to curly hair. They did not employ fantastic forms of hair dressing, as the Negroid peoples did, but many of the men wore long full beards. They spoke a language intelligible to the Bara, but with numerous differences in vocabulary and pronunciation. Very little is remembered concerning their social organization, but it is said that they had no king and that villages rarely combined against the common enemy. The Bara found it impossible to enslave them, even captive women trying to escape or otherwise making constant trouble for their owners.

The Kimosy lived in villages which were fortified with a simple ditch and stockade. They had large herds of cattle and cultivated unirrigated rice, a root crop which was either yams or sweet potatoes and maize. They dressed in beaten bark and men wore a kilt instead of the loin cloth. They knew how to work iron, although they were much inferior to the Bara in this respect, but the metal was so scarce that they used it only for short knives and axes of the cleaver variety, a type still used by the plateau tribes. Their weapons were unbarbed wooden spears, bat-like wooden clubs, and slings woven from fiber. They did not use the shield or the bow and the blow gun, if present, was not used in war. They buried their dead in the earth and the graves are still to be seen, usually in groups of three or four. These graves are short, three to five feet long, and are marked at the head and foot by stone slabs about eighteen inches high. The Kimosy did not erect menhirs as the present Bara and Betsileo do.

The Bara insist that they never intermarried with the Kimosy or incorporated any of their villages into their own tribe. Nevertheless, one Bara gens of the Vohitra (common) caste has a name which suggests descent from them. Unfortunately, no members of this gens were seen, but they are said to look like the other Bara, i.e. to be tall and Negroid.

These accounts of the Kimosy check so closely with what we know of the culture and physical type of the tribes of the plateau at the time of the first European contact that there seems no reason to doubt their authenticity. They indicate that Indonesian peoples once covered most of the southern part of the island and that they were driven back toward the plateau in comparatively recent times.

The Betsileo and Imerina, who live in the plateau, also have their legends of aborigines whom they call the Vazimba. Students of Imerina history have speculated extensively as to who these Vazimba were, but the weight of evidence seems to indicate that they were the direct ancestors of most of the present plateau population. To understand the native attitudes toward them one must keep in mind the extreme parochialism of the various gentes. The members of such a group regarded all other groups as strangers and potential enemies even when these outsiders were closely similar to themselves in language, culture, and physical type. Coupled with this there was a mobility so great that few gentes had held the same territory throughout their history. Apparently, the term Vazimba was used to designate any group who had occupied a territory before the current inhabitants moved in. There are certain gentes in the Imerina tribe which claim Vazimba ancestry, but these do not differ noticeably from the other gentes of Hova (common) caste. Moreover, most of the stories of the Vazimba represent them as much like the historic people but ruder and less intelligent. There are a few tales in which they are described as blacks, either dwarfs or, among the southern Betsileo, as very tall with heads that ran to a peak, but these are not enough to invalidate the general conclusion. Negroid groups may have penetrated the plateau in time to be Vazimba, in the sense of previous inhabitants, to various Betsileo and Imerina gentes.

The Imerina are almost unique among Madagascar tribes in having a legend of migration to the island as well as stories of movements within it. Since the consolidation of the Imerina into a kingdom, which seems to have taken place in the seventeenth century, there has been more cultural interchange between the various gentes, and I was unable to discover to which of them this myth had originally belonged. According to this tradition, the ancestors of the Imerina once lived far away beyond the sea. They set out in search of a land where there was no death. They came to a place where there were black people with tails. Then they reached a place where there were no tombs and prepared to settle there, but they discovered that tombs were lacking because the inhabitants, also black, ate their dead. They sailed on once more and finally landed on the southwest coast of Madagascar near the present city of Tulear. From there they pushed northeastward into the plateau, where they found the Vazimba in possession. As we shall see presently, there is good evidence of a late stratum of Indonesian culture in the plateau and this tradition may refer to the migration of its bearers.

When we reach the period covered by historic records, there is further evidence of migrations. A number of tribes on the southeast coast claim descent from Arab groups who settled in this region from approximately the tenth to the twelfth centuries. The strength of the Arab influence in this region is indicated by their knowledge of paper and book making, their retention of Arabic writing, employed almost exclusively for magical purposes, numerous Arabic words in the local dialects, some use of robes of Arab pattern, etc. These people say that their ancestors came from Maka (Mecca), and everything seems to indicate that they were true Arabs rather than Arab-Negro mixtures. However, in their present culture the native elements are strongly dominant. The local technology shows little or no trace of Arab influence, outside the single factor of paper making, and the social organization is the regular Malagasy one of localized gentes. They have adopted the local patterns of gens tombs, sacred rivers, and ancestor worship, with a complete loss of Mohammedanism, and have even assumed gens totems. For these they have selected such animals as the wild boar, domestic pig, and eel, all unclean under Mohammedan law. Probably, the patterns of avoidance which this law entailed offered a convenient link between the two systems. Such complete absorption of Mohammedan groups is unusual and would seem to indicate both that there was a strongly developed, well adjusted native culture in the region at the time of their arrival and that the size of the immigrant groups must have been small. Nevertheless, the newcomers seem to have been respected by the earlier population and many of the modern gentes are proud to claim Arab descent.

In addition to this migration to the southeast coast there has been a steady infiltration of Mohammedans on the west and especially on the northwest. These immigrants seem to have been predominantly black Arabs, i.e., groups of mixed African and Arab blood and culture comparable to the present Swahili. This movement had probably begun by at least the twelfth century and still continues, but it seems to have had little effect on Malagasy culture outside a limited area in the northwest where the immigrant element was strong enough to replace the native population. Lastly, there has been European contact since the early seventeenth century. Until the beginning of the ninteenth century this contact was strongest on the northeast coast. There was a brisk European trade with this region in slaves and native products and Antongil Bay was a famous rendezvous for European pirates. In the early nineteenth century the Imerina welcomed missionaries to their territory and the focal point of European influence shifted to the plateau. Europeans assisted the Imerina kings in the organization and extension of the Hova empire, reduced the Imerina language to writing, introduced many technological improvements and finally, after a short period of resistance and nativistic movements, converted the entire tribe in the eighteen sixties.

When we turn from the historic and traditional material to a study of trait distributions we also find what seems to be fairly conclusive evidence of cultural stratification. Even at the time of the first European contact the Imerina and Betsileo, in the plateau, practiced irrigated rice culture, with extensive terrace systems, made pottery and had highly developed weaving. All these techniques reached their highest point among the Imerina. The weaving of this group was especially notable. They used banana fiber, obtained from a species raised for the purpose, raffia, bast, cotton, and the silk of a local moth which had been semi-domesticated. Certain gentes of the Andriana (noble) caste also employed the typically Indonesian technique of warp dyeing to produce intricate designs. The tribes of the eastern mountains and coast, on the other hand, had no weaving, pottery, or irrigated rice culture They dressed, as several of these groups still do, in bark cloth or mats, cooked in earth ovens or bamboos, and raised rice by the primitive cutting and burning method. That these differences were not due to environmental conditions is proved by the steady spread of weaving, pottery making, and irrigated rice culture into this region during the historic period. European trade is interfering somewhat with this diffusion at the present time, but everything indicates that the process has been a continuous one. The tribes of the west coast and extreme south of the island had simple weaving and pottery making but raised very little rice and did not use irrigation. This may be explained in part by the arid nature of their territory, but there were places in it where irrigated rice culture was possible, as shown by their present commercial exploitation. The cultural deficiencies of these western tribes along other lines were compensated by their great skill in metal working, an art in which the plateau people and those of the east coast were markedly inferior, and by their more elaborate and centralized political organization. There are various other cultural traits the distribution of which cuts across this three-fold division, but none of them seems as significant as those mentioned, and the limits of this paper make detailed discussion impossible.

The distribution of physical types in Madagascar is also suggestive. Unfortunately, there is a lack of exact data which makes anything more than a very general statement impossible. However, if we try to classify the population of the various regions on the broad basis of Negroid, Caucasoid, and Mongoloid affinities the results are as follows: The central part of the island, i.e., the plateau, is occupied by groups who show marked Caucasic characteristics. They have light brown skins, wavy to curly hair, moderate development of beard and body hair (obscured by the universal practice of shaving or depilation), and eyes which lack the epicanthic fold. Their features are reminiscent of those of the eastern Polynesians. Among the Imerina there are a considerable number of individuals who are still lighter in color with straight hair, sparse beards, and a well marked epicanthic fold. Many of these would readily pass for south Chinese but for their somewhat lighter skin color. This type is rare outside Imerina territory and the Imerina themselves believe that within the tribe it occurs more frequently in the gentes of Andriana (noble) caste than elsewhere. Imerina commoners frequently pointed out to me, with quiet satisfaction, that they looked much more like Europeans than the nobles did, and my own superficial observations would bear this out. Lastly, the whole island outside the plateau is occupied by groups who are predominantly Negroid in their affiliations. However, their type differs so markedly from that of natives from the adjoining coast of Africa, a considerable number of whom have been brought to Madagascar in recent times, that the latter are instantly recognizable in any Malagasy crowd. In spite of numerous local variations, the black Malagasy tend to have higher noses and thinner lips than typical African Negroes, while their hair texture is markedly different. The hair grows long, is heavy and is closely crimped rather than spirally curled. The men of some of these groups show rather heavy beard and body hair. The skin color is, in general, extremely dark. The African groups which these Malagasy resemble most closely are those of the far northeastern part of the continent, the Galla, Somali, etc. It is a curious and possibly significant fact that the Malagasy of the east coast, i.e., those on the Indian Ocean side of the island, are quite as Negroid as those on the west side.

In view of all the evidence available, the following reconstruction of Madagascar history appears the most probable. First, and admittedly with least evidence to support it, there is a possibility that the earliest inhabitants of the island were a Negroid pigmy group still in the food gathering stage of culture. This conclusion rests partly on the Tanala traditions cited, partly on references to such dwarfs in the folk-lore of many other tribes. If such a group existed, we are at once faced with the difficulty of explaining how they could have reached the island. The Mozambique channel is over two hundred miles wide at the narrowest point, while the distinctive fauna of Madagascar indicates that the island has been isolated since fairly remote geological times. However, in the midst of this fauna there appear a wild pig, related to African species but not to the domestic pig of the natives, a pigmy hippopotamus, recently extinct, and the African crocodile. None of these forms could have crossed the present channel, but any of them could have negotiated short stretches of water such as straits between close lying islands. Their presence suggests that Madagascar was once linked to the mainland by some sort of island chain and human beings, even at a very low level of culture, might have crossed by such stepping stones. Madagascar is a poor territory for food gatherers, since it lacks large game and has few wild vegetable foods. Such an early population, if it existed, must have always remained sparse in numbers. It could have offered little resistance to invaders of better physique and much more advanced culture. If we may judge from the living Negrito and African pigmy groups, the cultural equipment of such a people would probably be meager and of a sort which would leave few archaeological remains; so their presence in Madagascar may never be proved nor disproved.

The second group to reach Madagascar, if we grant the presence of the black pigmies, was a brown skinned, predominantly Caucasic people, the direct ancestors of the Kimosy and Vazimba of native tradition and through them of most of the present inhabitants of the plateau. The Tanala traditions of the Zanakanony and the fact that the tribes who were the most direct descendants of these people were inferior iron workers suggest that they may not have been familiar with metal at the time of their arrival. However, the crudeness of their stone working, as described by the Tanala, would not necessarily indicate a low level of culture in other respects. The stone implements of the historic Polynesians, other than their adzes, were equally crude. These immigrants probably had domestic animals and practiced agriculture by the cutting and burning method, but they lacked the arts of weaving, pottery making, and irrigation. They made bark cloth and mats and cooked in bamboos or in the earth oven. They lacked the bow and shield but used slings and wooden spears and clubs. Their social pattern was one of small endogamous local groups, and they lacked techniques for the creation or administration of larger political units. If we may judge from the historic distribution of certain social and religious patterns, they probably had hereditary village chiefs who were also invested with priestly functions. Descent was probably patrilineal with considerable stress on primogeniture and interest in genealogies. The ancestor cult was probably the dominant element in their religion.

This group probably occupied most of the island, forcing the black dwarfs into the worst territory. It adjusted its culture to the various local environments and thus provided the foundations upon which all the later cultures were built. To it can be tentatively ascribed the introduction of the Malayo-Polynesian language spoken by the modern Malagasy.

The physical and cultural affiliations of this group are clearly with Indonesia. Although they cannot be equated exactly with any of the historic tribes of that region, they show many resemblances both to the simpler and more archaic people there and in southeastern Asia and to the Polynesians. There is abundant evidence that the ancient Indonesians were skilled navigators; so the presence of these people in Madagascar is not incomprehensible. However, there are some interesting problems in connection with their probable migration route. When Europeans first explored the western part of the Indian Ocean, they found the various island groups south of the Maldives and east of Madagascar unoccupied. Moreover, many of these islands were inhabited by large helpless animals or birds, such as the giant tortoises of the Seychelles, the dodo of Mauritius, and the solitaire of Reunion. These forms disappeared very rapidly with human contact, and it seems improbable that they would have survived into historic times if these islands had ever been used as even temporary stopping places in voyages across the Indian Ocean. It is also difficult to see why Indonesians who had discovered these islands would have failed to colonize them. Mauritius and Reunion in particular have rich soil, abundant water, heavy forest, and a climate admirably adapted to the growing of Indonesian crops. These island groups lie across the most direct route from Indonesia to Madagascar, and, if the ancestors of the Malagasy came by this route, we are forced to conclude that they must have come in small numbers and with very few voyages. Any large scale movements comparable to the Polynesian explorations of the Pacific would have led to settlements on the islands.

It is highly probable that the Madagascar immigrants used that typically Indonesian craft, the sailing canoe with outrigger. The outrigger and sail were both unknown on the Indian Ocean side of Madagascar at the beginning of the historic period, although the natives here had canoes. Outriggers and inverted triangle sails of a type much like that used in eastern Polynesia and in part of Indonesia were used on the Mozambique channel coast of Madagascar, in the Comoro Islands, and for some distance northward along the African coast.

All these facts make it appear probable that the Indonesian migrants crossed the Indian Ocean by a northern route, reached the coast of Africa, and came down it to Madagascar. The statement in the Imerina migration myths that they landed on the African side of the island would be quite in keeping with such a migration route, although the myth itself probably refers to a later movement than the one under discussion.

In spite of the strong Negroid element in the Madagascar population, it seems questionable whether there was any migration of pure Negro groups to the island aside from the hypothetical settlement by dwarf blacks. There are no elements of culture or language whose distribution suggests the arrival of a complete African culture complex. It is true that metal working was most highly developed among the predominantly Negroid groups on the western side of the island, but it was poorly developed among the equally Negroid peoples of the eastern coast. Patterns of political organization on a super-village scale, which might conceivably be African, were also poorly developed among these east coast people. Distributions suggest that these patterns were diffused over the island from two foci, one of the southeast, the other on the northwest, at both of which there were strong Arab contacts. Everything suggests a gradual infiltration of Negroid stock into the island with, possibly, the introduction of occasional isolated culture elements of African origin. Moreover, the type of present black Malagasy would seem to indicate that the bulk of their ancestors came not from the part of Africa which lies opposite Madagascar but regions farther north.

If the presence of the Negroid type is a result of gradual infiltration, we are still left with the problem of accounting for its dominance in so much of the island. If we plot the distribution of predominantly Negroid and predominantly Indonesian groups at the beginning of the historic period, we find that the limits for the two physical types agree rather closely with those between malarial and malaria free areas. There seems to be conclusive evidence that there was no fever in the high central plateau until a few generations ago. I believe that this correlation is not accidental, for it finds a striking parallel in the eastern Pacific where the distribution of Negroid and Indonesian populations also adheres closely to the fever line. Negroids occasionally occupy malaria free islands, as in Fiji, but there seem to be no Indonesian groups in malarial islands. The language and culture of many of the Melanesian Negroid tribes seem to indicate fairly intensive contact with Indonesians, and the best explanation for the situation seems to be that Indonesians settled in these islands, mixed with the native black population, and then were finally bred out of the mixture due to their greater malaria susceptibility. The brown skinned Imerina and Betsileo of Madagascar suffer from fever almost as badly as do Europeans. It is hard to imagine their maintaining their population in fever territory without the aid of quinine. The Madagascar blacks, on the other hand, show a high degree of resistance. They regard malaria as an only moderately serious children's disease and rarely have attacks as adults. They thrive in regions where the Indonesians cannot survive.

It seems that the historic situation in Madagascar can best be explained by the hypothesis that migrations from Indonesia to the African coast and movements from there southward into Madagascar went on over a long period. The first Indonesians to reach the island were almost pure in blood, but their successors, who had sojourned on the coast to the north, had more and more Negroid admixture. At the same time these mixed groups retained enough of the Indonesian language and culture to amalgamate readily with the people already in Madagascar. Possibly they found parts of the island already malarial; perhaps they brought the disease with them, for it is quite possible for individuals with a high degree of immunity to act as carriers. In any case, the Indonesian physical type was largely bred out in the malarial regions, while it survived in the malaria free plateau.

The Imerina migration myth probably refers to the last movement in the occupation of Madagascar, aside from the historic Arab intrusions. These migrants also came from Indonesia, but they left that region at a considerably later time than the first migrants and carried with them certain new culture elements: the cultivation of irrigated rice, weaving and warp dyeing, and possibly pottery. Their patterns of social and political organization probably were not markedly different from those of the earlier migrants. However, their physical type seems to have been considerably more Mongoloid, a condition which would be quite in keeping with what we know of the gradual infiltration of Mongoloid elements into the population of Indonesia itself. They probably came to Madagascar by the same migration route as their predecessors, but with few stops en route, and once in the island rapidly forced their way into the plateau. There they became the ancestors of certain of the Imerina gentes, including most of those of noble caste. The lack of Negroid admixture among their descendants suggests that their migration from Indonesia to the plateau was an almost continuous movement. This becomes understandable, if we substitute for a search for "a land where there was no death," the constantly recurring phrase in their migration myth, "a land where there was no fever." They would not have found such a place on the African coast or in the Madagascar lowlands.

I recognize that the hypothesis of a movement from Indonesia to the northeast coast of Africa, and especially that of a series of migrations over a considerable period of time, will appear fantastic to most anthropologists. However, I have presented the evidence in support of it and wish to point out that the evidence against it is scanty. If we are to judge from the content of the Indonesian cultures which reached Madagascar, even the last migration must have taken place not long after the beginning of the Christian era. Hindu culture had begun to penetrate western Indonesia by that time; yet the Indonesians did not bring with them the wheel or plow, writing, or any elements of art or mythology which are recognizably of Hindu origin. At the same time, the Imerina dialect includes a few words which seem to be from Sanskrit roots, suggesting that these last migrants had been touched by the fringe of Indian civilization. The first Indonesian migration to Africa and Madagascar was probably some centuries earlier, since its culture shows no Indian influence.

If the contact between northeastern Africa and Indonesia was broken even fifteen hundred years ago, the chances of Indonesian elements surviving there today would be slight. We must picture the Indonesian settlements as forming at most a thin coastal fringe in inhospitable territory. Moreover, this territory has been dominated for at least the last thousand years by the vigorous and technically advanced Arab culture with its intolerant religion. In its spread this culture has obliterated other cultures much stronger than that of the Indonesians could have been. Proof or disproof of the presence of Indonesians on the African coast must be sought in the archaeology of the region, still a closed book, or in the survival of recognizably Indonesian elements in the cultures of African groups outside the Arab dominated area.

It remains only to say a word about the influence of the Arabs in Madagascar. The Arab migrants to the southeast coast, who were isolated from their own people, were almost completely absorbed. Those on the northwest, who were able to keep touch, remained as an alien and unassimilated element in the population. However, the Arabs seem to have contributed to Madagascar culture the pattern of kinship and of the peculiar form of social stratification in which one gens, while still occupying its territory and remaining economically self sufficient, dominated a series of other gentes, kept order among them and led them in war. The gradual spread of this pattern from the points of Arab contact can be traced and the dominant gentes in a surprisingly large number of Malagasy tribes claim Arab descent. This pattern spread first among the Negroid peoples of the west and south, increasing their efficiency in war and enabling them to drive back the unorganized Indonesian villagers into smaller and smaller compass. It was only when the Imerina adopted and improved upon this pattern, in the eighteenth century, that the Indonesian element rose to dominance in Madagascar.

IX

LINGUISTIC AND RACIAL ASPECTS OF THE MUNDA PROBLEM

Gordon T. Bowles

IN the spring of 1935 my wife and I were sent by Harvard on a two year expedition to the Tibeto-Burman speaking regions of North India and adjacent areas. The purpose of the expedition was to continue comparative racial studies of the Tibeto-Burman speaking peoples which I had commenced in 1930–1931 in southeastern Tibet and along the West China frontiers. During the two years, in addition to our scheduled work of collecting data on peoples in the Himalayan areas of India and North Burma, we attempted to gather material on populations in other sections of North India which might be of assistance in dealing with specific problems not directly concerned with our main task. One of these problems is presented in this article.

In 1933, while studying under Professor Dixon's supervision, I had been assigned the task of assembling and evaluating existing data on the Munda and their cultural origins. The presence of people speaking languages in the heart of India apparently unrelated to those of the rest of the country presented a problem which had attracted the attention of scholars for more than a century.

The problem first arose as a linguistic one and it is quite natural, therefore, that students of language should have been the ones principally concerned in trying to solve it.

By 1910, after various attempts had been made to connect the Munda languages with other linguistic families throughout the world, considerable evidence had accumulated in support of a possible relationship between Munda and a few small scattered languages found high in the Himalayas between the Great Central range and the Inner or Zanskar range of the Punjab Hills, and also between Munda and the Mon-Khmer languages of southeast Asia. The latter family has only one certain representative in continental India: Khasi, in the Khasi Hills of Assam.

Out of this mass of material it is possible to see the gradual development of a number of theories concerning the origin and spread of the Munda and their culture in India. Briefly, the argument of one of the most outstanding of these theories is as follows: prior to the conquest of the Ganges Valley by speakers of Sanskrit and related languages, there existed in that area peoples speaking languages of the Munda or Kolarian family, a family now restricted to the hilly regions of Chota Nagpur in Orissa and parts of Central India.

It is thought that originally these people must have appeared from either the West or the East, more likely the latter. Some believe they came from Burma, through Assam, into Bengal and thence spread throughout the Ganges Valley northwestwards as far as the Punjab Hills. It has even been suggested that the people of the Indus Valley civilization (Harappa culture) may have spoken a Munda tongue. Gradually, as the Aryan invaders of the Indo-Gangetic plain gained control of new territories, the Munda users were either forced back to their present restricted location or, if there were no major movements of peoples, there must have been some conversion to Munda languages on the part of the present day speakers of these languages.

As this theory developed, efforts were made to obtain corroboration by the acquisition of new cultural and racial data. It was tacitly assumed that language was more constant than physique, and also that if a language relationship existed, some racial as well as material cultural connections must have survived.

It is indicative of the extent to which this process of reasoning has been followed and the theory accepted that E. J. Rapson, editor of the *Cambridge History of India*, should have written: "The theory that the Dravidian element is the most ancient which we can discover in the population of Northern India, must also be modified by what we now know of the Munda languages, the Indian representatives of the Austric family of speech, and the mixed languages in which their influence has been traced. Here, according to the evidence now available, it would seem that the Austric element is the oldest and that it has been overlaid in different regions by successive waves of Dravidian and Indo-European on the one hand, and by Tibeto-Chinese on the other. Most ethnologists hold that there is no difference in physical type between the present speakers of Munda and Dravidian languages. This statement has been called in question; but, if it be true, it shows that racial conditions have become so complicated that it is no longer possible to analyze their constituents. Language alone has preserved a record which would otherwise have been lost."[1]

Further on Rapson adds: "The Munda languages are scattered far and wide. They are found not only in the Santāl Parganas and Chotā Nāgpur but also in the Nahādeo Hills of the Central Provinces and in the northern districts of the Madras Presidency; and they form the basis of a number of mixed languages which make a chain along the Himalayan fringe from the Punjab to Bengal."[2]

The theory is further "strengthened" in the following sentences: "And there is some evidence that they (the Austric languages) shared the same culture in neolithic times; for the 'chisel-shaped high-shouldered celts' are especially characteristic of these regions. There can be little doubt that the Indian and Burmese tribes who speak Austric languages are descended from the neolithic peoples who made these celts."[3]

During the course of my study it was this series of assumptions devoid of satisfactory corroborative evidence which made me realize the necessity of a more careful inquiry into the physical as well as cultural characteristics of the Mundas and of those with whom they had in one way or another come to be associated.

The present study is an attempt to summarize the results attained thus far in the linguistic field and to produce a somewhat more satisfactory basis for a comparison of the racial characteristics of representative groups of the peoples concerned.

SUMMARY OF THE LINGUISTIC THEORY

It will be easiest to understand the implications of the main theory if most of the important studies which have been made thus far are summarized.

In the last century many writers including Hewitt, Logan, Mason, Schott, and Phayre wrote various articles purporting to demonstrate an association of the Munda[4] with the Mon of Burma and the Khmer of Siam and Indo-China. While they dealt chiefly with linguistic material, it is quite evident that they were satisfied that a racial relationship must somehow exist where a linguistic similarity had been demonstrated.

In 1906 Pater Wilhelm Schmidt of Vienna, on the basis of materials assembled by these pioneers and after completion of independent comparison of various Munda languages and dialects with Mon-Khmer languages, announced in no uncertain terms that "This relationship is no longer an hypothesis but a fact which is as certain as that of the relationship existing among the Indo-Germanic languages."[5]

At the same time he announced his sympathy with the suggestion of various writers that the Mon-Khmer languages were related to those of Indonesia and through them to the whole Malayo-Polynesian family or, as he called it, the Austronesian. To the combined Austroasiatic and Austronesian super-family he gave the name Austric.

Pater Schmidt was not directly responsible for anything except the three names which he coined. Such men as Crawford, Logan, and others had previously conceived of this larger relationship as had also two of the classical scholars of Indonesian languages, H.N.v.d. Tuuk and Professor Kern.[6]

Even this pyramidal linguistic structure which is based largely on the conclusions of previous investigators was apparently not enough to satisfy Pater Schmidt's desire to create a tremendous linguistic brotherhood stretching from Madagascar and the Himalayas in the West to Hawaii and Easter Island in the East. He has seen fit to introduce to this huge family of "kindred" languages also Japanese and the languages of Australia.[7] Trombetti has even seen a connection between Munda and certain continental African languages.[8]

Schmidt's basis for the association of Munda with Mon-Khmer languages may be condensed into four main factors:

Phonetics:	Similarity of sounds.
Syntax:	Similarity of original word construction (word stems, simple prefixes and their

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[1] Rapson, 1922, p. 41.

[2] Rapson, 1922, p. 48.

[3] Rapson, 1922, p. 49.

[4] For the first use of the word "Munda" see Konow, 1908, p. 68.

[5] Schmidt, 1906b, p. 64.

[6] See Brandstetter, 1916.

[7] Schmidt, 1930.

[8] Trombetti, 1928.

	strengthening by infixed nasals and similar infixes and suffixes).
Grammar:	Grammatical similarity—based upon the use of such factors as the postpositional genitive, inclusive, and exclusive genitive.
Vocabulary:	Some two hundred common word groups.

It may be noted in passing that the peculiarities just enumerated are only a few of those which distinguish Munda from neighboring languages.

In an effort to utilize any additional material which would support his linguistic views Schmidt has drawn also upon existing physical data.[9] These include measurements and indices by Martin, Maurel, Zabrowski, Neis-Zabrowski, Flower, Virchow, etc. The total number of individuals of the Mon-Khmer and related language groups cited is 145 in ten groups (excepting the Senoi whose total is not listed). For these no measurements but merely three indices are given, cephalic, nasal, and orbital. This means that he has paid no attention to size, but merely to the proportional relationships of different measurements to each other. The range of the cephalic index is 67–88 for individuals, that of the nasal index (given only for the Khmer proper) is 42–60 for a very small number of individuals, and the orbital, 74–97.

For anthropometric data from Chota Nagpur,[10] Schmidt has an impressive total of 946 individuals divided into 17 series, but only part of these are Munda; the remainder are either Dravidian or Indo-European. Furthermore, stature is used for the Munda although there is no comparable measurement listed for the Mon-Khmer nor is the orbital index given. The comparison is thus reduced to two indices, cephalic and nasal. Furthermore, while the cephalic index of the Munda, etc. (72–76 for means), is comparable to that of the Mon-Khmer, etc., the nasal index jumps forty points to 85–102 or almost twice that of the Khmer groups. In addition, there are numerous sources quoted which refer to such generalities as "straight to wavy hair" (no figures or percentages given), "Mongoloid features," etc.—the erratic, casual impressions of various observers.

It is obvious that the data used by Schmidt are not deserving of further consideration, but as evidence of the lengths to which he is willing to go, it is necessary to quote him in translation:

> In conclusion, I voice my concurrence with Martin's statement above mentioned that 'the enumerated characteristics are certainly insufficient to determine an identity among all these people' for that our information is too meager. . . . But I believe that Martin's further statement has meaning here: 'but they point toward such a possible connection' or in other words there is as yet no positive factor against such a conclusion.[11]

Negative reasoning of this type seems to be characteristic of Schmidt's various articles on the languages and people of the Indian and Oceanic areas.

Simultaneously with the appearance of Schmidt's articles, volume IV of the *Linguistic Survey of India* under the direction of G. A. Grierson was published. Grierson did not in so many words commit himself to Pater Schmidt's viewpoint, but the prominent place given to it in the Survey has probably been responsible in large part for its acceptance. He writes:

> I am convinced that Pater W. Schmidt is right in classing all these forms of speech together into one great family but I am not as yet in a position to prove the connexion.[12]

In very general terms, Grierson dismisses Hahn's contention of a fundamental Dravidian origin for the Munda languages, although he accepts with reservations the speculations of Professor W. Thomsen and G.v.d. Gabelentz concerning the probable justification of linking the Kolarian (Munda) languages with the Australian family, and he tacitly concurs with Pater Schmidt's categorical pronouncements.

R. Heine-Geldern[13] also made an attempt to associate the far-flung Austric family and especially the Munda and Mon-Khmer by means of cultural traits, notably the shouldered celt referred to above and by the custom of erecting "menhirs." For physical verification, the article refers to E. F. von Eickstedt's studies in India.[14] In my opinion, however, the numerous attempts to justify this latter claim are scarcely more satisfactory than those set forth by Pater W. Schmidt.

Not until as late as 1932 was there any challenge of importance to the theory of a Munda-Mon-Khmer connection. With the appearance of W. v. Hevesy's *Finnisch Ugrisches aus Indien*[15] there was made available a body of material comparable in bulk at least to that of the Schmidt school. Von Hevesy attacked the hypothetical frame-work upon which the Austric super-family was based. He had the advantage of being able to make use of such monumental works as J. Hoffmann's[16] *Encyclopaedia Mundarica*, a much elaborated version of parts of his earlier Mundari Grammar,[17] and the mass of material collected by Bodding[18] which had not been available to earlier theorists. After years of research, v. Hevesy arrived at the equally categorical conclusion that the Munda languages are definitely related to Finno-Ugric.

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[9] Schmidt, 1906b, p. 70.

[10] Apparently, the following figures are from Risley, 1903.

[11] Schmidt, 1906b, p. 70.

[12] Grierson, 1906.

[13] Heine-Geldern, 1928.

[14] Eickstedt, 1928.

[15] Hevesy, 1932.

As a general criticism of the Schmidt school, v. Hevesy offers the following comments:

1. Mon-Khmer is monosyllabic and although it has prefixes and infixes, never suffixes. Munda on the other hand although largely monosyllabic is sometimes bisyllabic in base and uses many suffixes.
2. Munda distinguishes between animate and inanimate. This is not the case with Mon-Khmer.
3. Whereas dual and plural pronominal forms exist in both language groups, Munda, unlike Mon-Khmer, has inclusive and exclusive forms (where the first person dual and plural either include or exclude the speaker).
4. The Mon-Khmer numerical system is decimal while that of the Munda is vigesimal.

The gravest errors v. Hevesy noted, however, were in the comparative vocabularies which embraced some 345 words in the 200 common word groups. Upon critical analysis he found that due to a failure to distinguish carefully between prefixes and suffixes the list had to be revised to no more than about 100 words.

In contradistinction to the rather small number of similarities between Munda and Mon-Khmer languages, all of which v. Hevesy has attempted to disprove, the list of factors given as a proof of a basic Finno-Ugric relationship is considerably larger.

1. Both language groups are agglutinative.
2. Neither distinguishes gender (no indication is given concerning this factor in Mon-Khmer).
3. Munda has roots used as nouns and verbs indiscriminately and this seems to have been the case in old Finno-Ugric and it survives in numerous examples in present day Finno-Ugric languages.
4. Munda distinguishes between animate and inanimate which is still partially true of Finno-Ugric.
5. Both groups make use of the dual.
6. Numerous suffixes are used by both groups and for similar purposes.
7. Word order is virtually the same.
8. Both groups make use of phonetic "vowel harmony."

Many other similarities are listed, and v. Hevesy finds that practically every distinctive feature of Finno-Ugric is identical with or strikingly similar to Munda, and in addition to the above syntactic, phonetic, and grammatic factors, he appends a comparative vocabulary of more than eleven hundred word groups of which a large number appear upon rather hasty perusal to be at least somewhat similar.

Von Hevesy is not alone in trying to repudiate the Schmidt school or at least to replace the supposed relationship of Munda to Mon-Khmer, etc., with a Finno-Ugric connection. He quotes Schrader to the effect that Finno-Ugric and Dravidian must have influenced each other at some prehistoric time. Sauvegeot[19] is also quoted as referring to the similarity between Munda and Finno-Ugric influence in the pre-Aryan culture of India. Other writers cited include such names as Caldwell, Lepsius, and Barbour. The latter[20] even attempted to relate Munda to the Japhetic language, Abkhaz of the West Caucasus, but apparently without success.[21]

In fairness to Schmidt, however, it must be admitted that it was due largely to the efforts of Hodgson[22] and Sten Konow[23] that these languages were granted a kinship status with Munda.

Hodgson is the real pioneer in this field. As early as the late seventies he discovered that the small isolated languages of British India along the Tibetan borders of the Punjab and the United Provinces—Manchati, Bunan, Tinan, Kanashi, Kanawri, Chaudangsi, Byangsi, Rangkas (Johari Bhotia), and Darmiya (Dharmia) and some of the languages of Nepal (Vayu, Jimdar, Yakha, Khambu, Limbu, etc.),[24] shared the common characteristic of using a pronominal suffix at the end of a verb which indicated the subject of the verb. On the basis of this single factor he referred to these languages as the "pronominalized" group. (See map 5 for distribution.)

Sten Konow[25] lists four principal characteristics of the so-called "complex" or western pronominalized Himalayan languages. These are:

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[16] Hoffmann and Emelen, 1930.

[17] Hoffmann, 1903.

[18] Bodding, 1929.

[19] Sauvageot, 1924.

[20] Barbour, 1921.

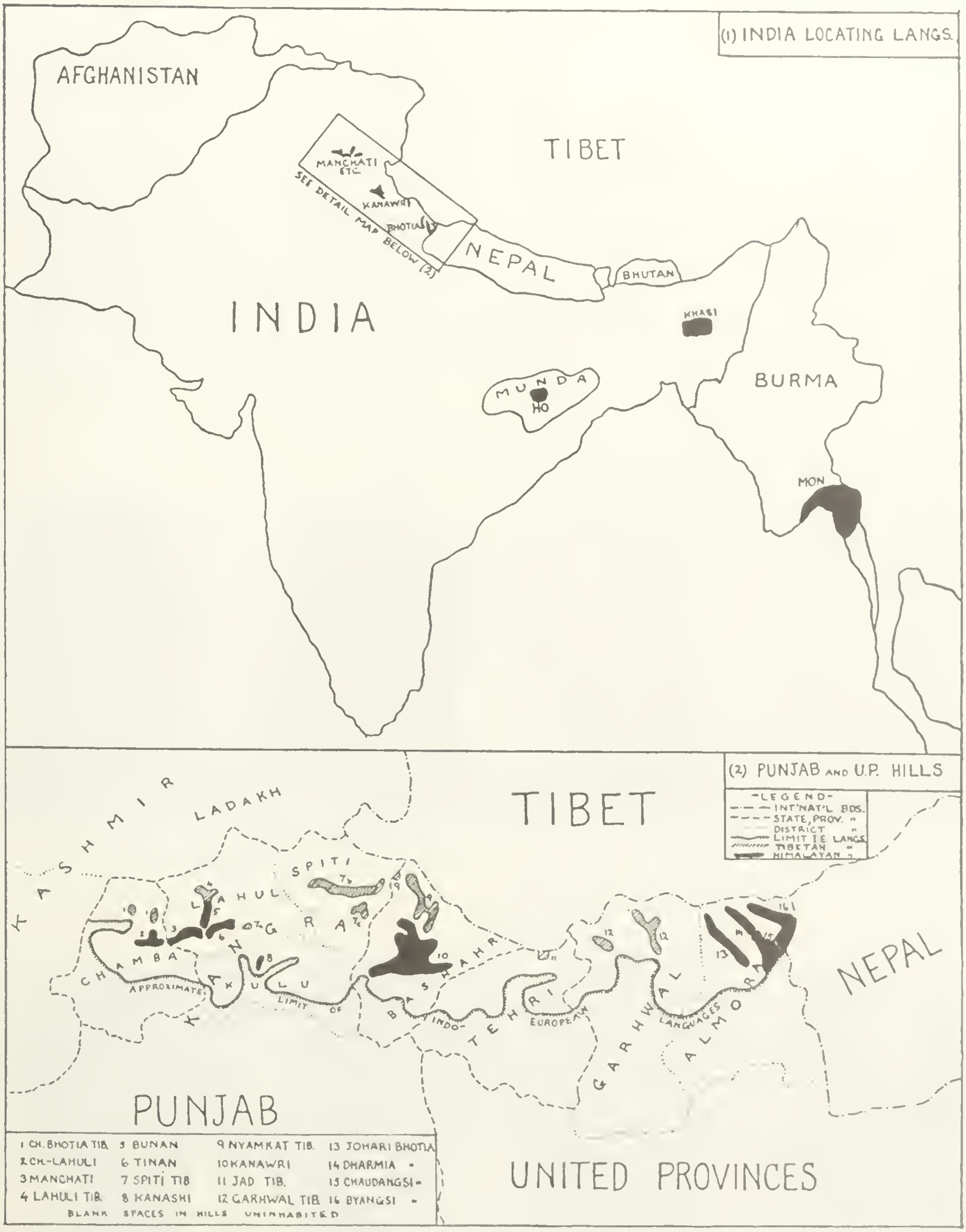
[21] Bleichsteiner, 1930.

[22] Hodgson, 1874.

[23] Konow, 1905.

[24] Grierson, 1906.

[25] In a later article referred to in Grierson 1906.



Map 5. Munda, Khasi, and Himalayan linguistic areas.

1. A vigesimal system of counting in higher numbers (which does occur occasionally in Tibeto-Burman languages but is not as characteristic of them as it is of Munda).
2. Singular, dual and plural personal pronouns in both inclusive and exclusive forms (Konow admits, however, that his material is insufficient except for Kanawri. Furthermore, he admits that such forms occur also in some of the Tibeto-Burman languages of Assam).
3. Inflection of verbs indicated by the addition of personal pronoun suffixes.
4. The incorporation of the object in the verb.

According to Konow, these primary characteristics of the pronominalized Himalayan languages are essentially lacking in true Tibetan languages. With Hodgson he agrees that it is largely these characteristics which should be used as a basis for indicating a partial classification or at least a "substratum association" of these languages with Munda.[26] He demonstrates the general tenor of his argument in the following quotation: "Hodgson has already long ago pointed to the analogy of Munda forms of speech, and it is a priori not improbable that the pronominalized languages have preserved traces of linguistic features belonging to some old non-Tibeto-Burman form of speech."[27] There does appear to be a certain amount of resemblance, and Konow safeguards himself from entire commitment by admitting a large number of exceptions. For example, although he states that in most essentials the phonetic system is apparently the same as that of western Tibetan, he holds that the vocabulary, on the contrary, is more similar to the Tibeto-Burman languages of Assam and in particular to the Lushai and Kuki Chin languages. It is precisely these languages of the Chin Hills, and also Garo and Bodo of the Garo Hills and Brahmaputra Valley which he cites as making use of the various inclusive and exclusive pronouns. He also admits that instead of adding pronominal suffixes to the verb, "in the Munda languages it is more common to add the pronominal suffixes, indicating the subject, to the word immediately preceding the verb."[28] This definitely seems to be not the case with the Himalayan languages. He also acknowledges that of the Himalayan languages only Kanawri is well enough known to be dissected with any degree of certainty. He goes so far as to state that Bunan agrees very closely with Tibetan, and he accepts simultaneously Jäschke's statement that the relationship between Bunan and Kanawri does not seem to be borne out by the materials used in the Linguistic Survey. The latter consist of lists of about 250 words in each of the dialects, translations of the parable of the Prodigal Son or some equivalent composition, and some textual material dealing with grammar and syntax. The word lists do not appear to be the same as those used for the Munda languages.

In short, since the pronominalized languages possess certain characteristics which, although not common to most Tibeto-Burman languages, nevertheless do appear among certain of them not even suggested as related to the Munda languages, there does not seem to be any real validity for the attempt to stress a relationship so exceedingly tenuous.

Finally, concerning the emphasis laid upon the use of pronominal suffixes: this characteristic means that pronouns are used as inflectional endings of the verbs and therefore might ultimately be demonstrated to be simple inflectional endings. There may even be doubt as to whether or not actual pronouns are used. If this latter is the case, the forms have undergone considerable metamorphosis; so much so that the second person suffix, as Sten Konow admits, cannot be associated with the usual second person pronoun. Under these circumstances it would appear that there is nothing more unusual in this procedure than the expected inflectional suffixes of the Sanskrit languages which are found over most of northern India and which also, as Konow further admits, exist also in some Tibeto-Burman languages.[29]

After summarizing the arguments used in attempting to prove a substratum relationship between the pronominalized Himalayan languages (essentially Tibeto-Burman by his own admission) with the Munda family, Konow concludes: "It seems therefore necessary to assume that Mundas or tribes related to them have once been settled in the Himalayas where traces of their language can still be observed in grammatical features of the dialects spoken at the present day."[30]

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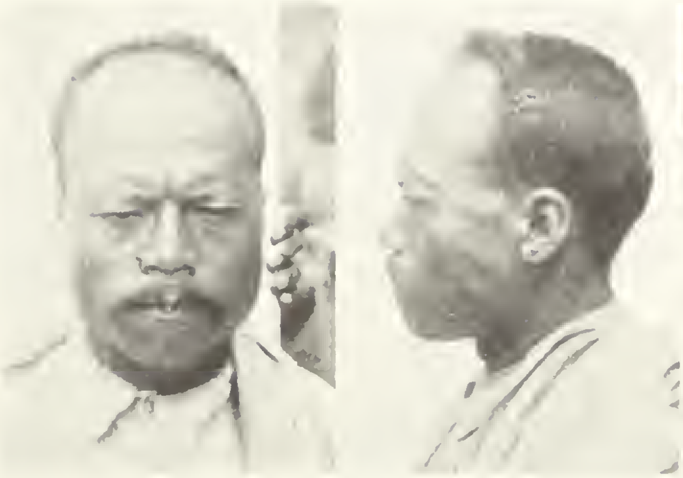
[26] Przyluski, 1924, p. 400, definitely calls the Lahuli group Munda languages.

[27] Konow, 1905.

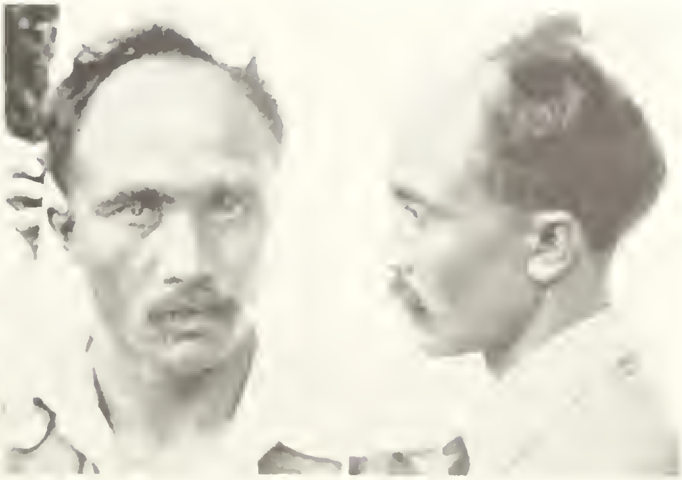
[28] Konow, 1905, p. 124.

[29] Thus, in Kanawri "g" is given as the suffix form of "g^a," "I," but "n" which is used for the second person is not traceable to the expected forms "ka" or "ki" but to some of the Nepal languages in which "thou" is given as "na" and "nan" etc. Konow, 1905, p. 122.

[30] Konow, 1905, p. 125.



Khasi
1



Khasi
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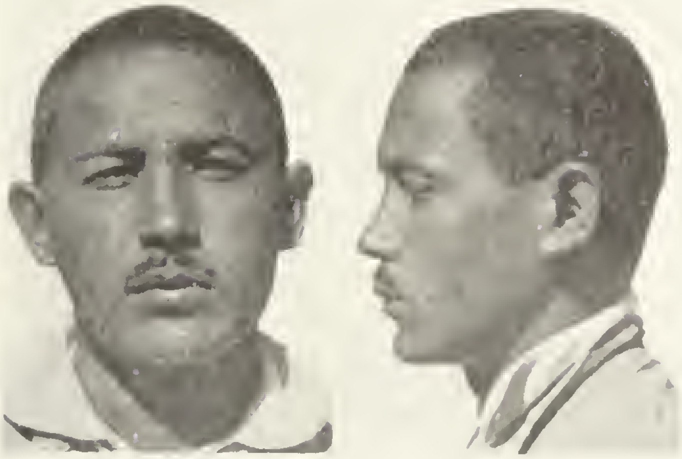
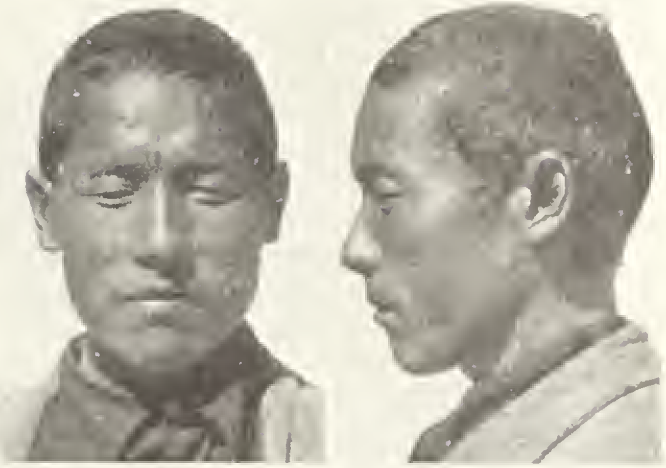


Bhotia
3



Bhotia
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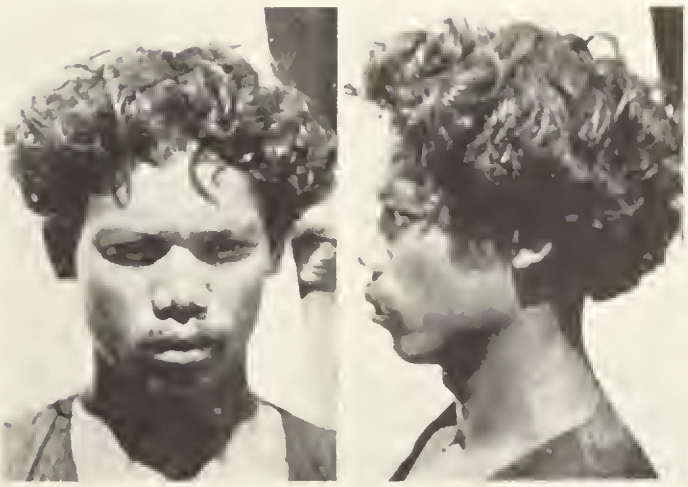
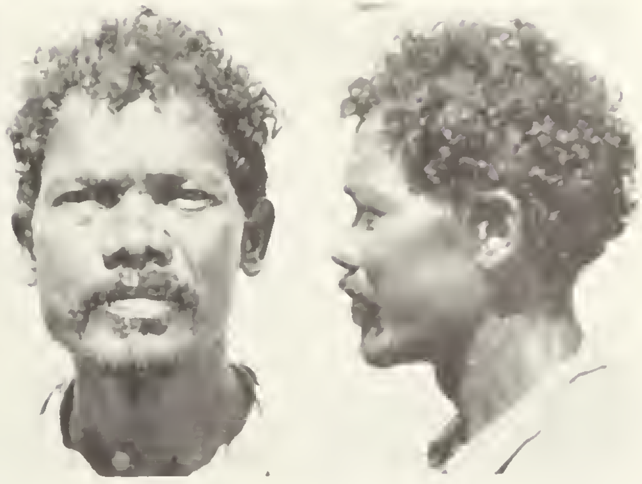
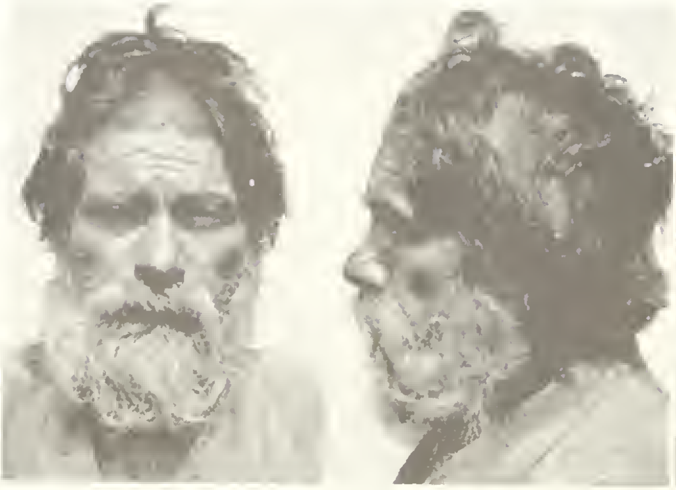


Munda
5

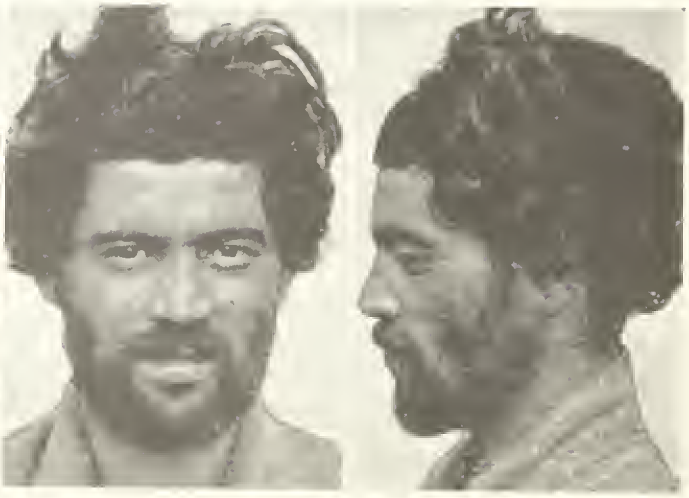


Munda
6

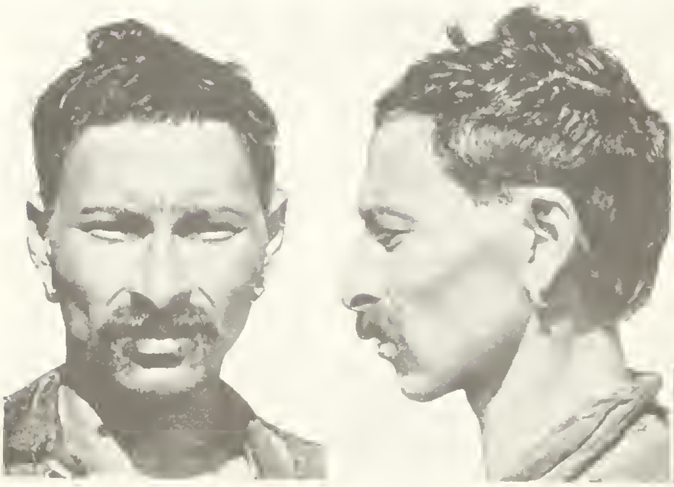
Khasi, Bhotia, and Munda types.



Manchati (Chamba-Lahuli)
1



Manchati
2



Manchati (Chamba-Lahuli)
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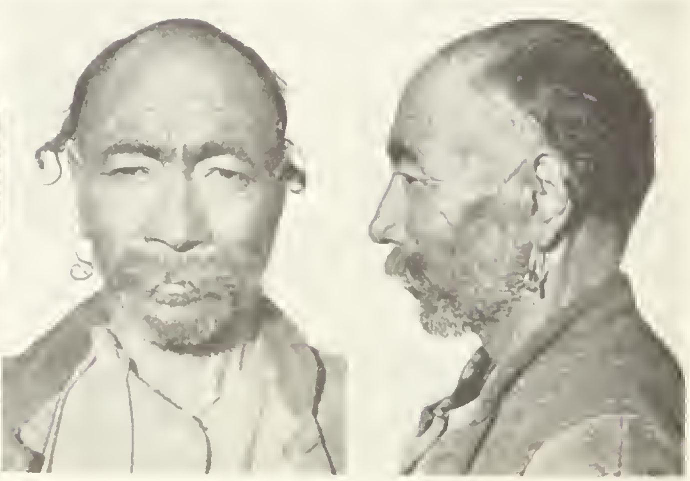

Manchati
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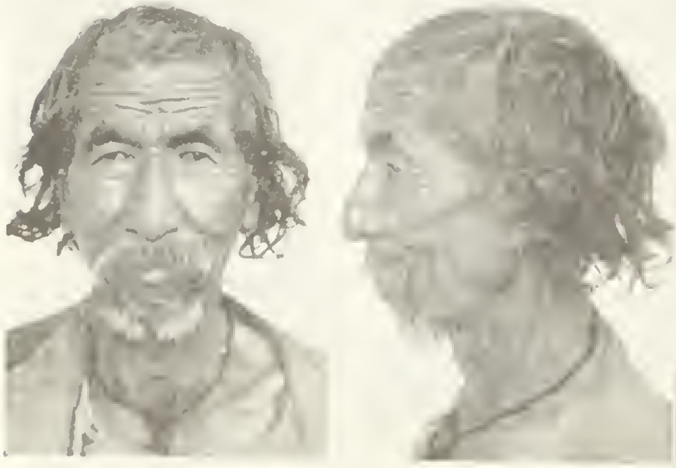
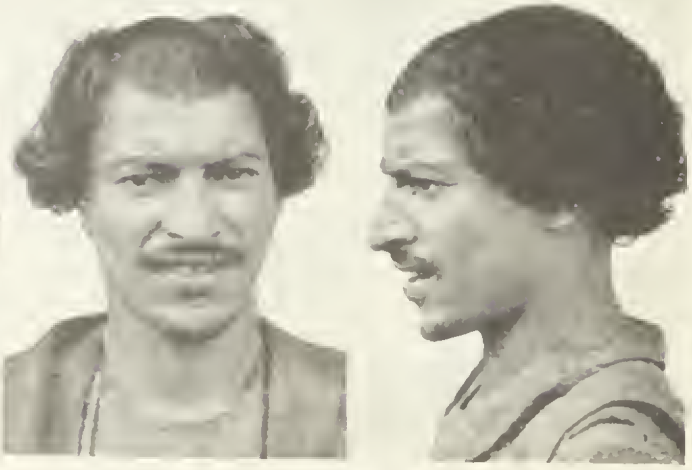


Kanawri
5



Kanawri
6

Manchati and Kanawri types.

It is apparently this final sentence which is largely responsible for the theory above referred to which is now so commonly accepted by many writers on northern India.

From a rather different point of view there is some fairly reliable evidence that old Munda words occur as place names in various parts of North India.[31] Certainly if we are to postulate that the Munda family of languages is related neither to Dravidian nor to Indo-European, the families which today surround it, it would not only be possible but highly probable that it was at one time spoken in areas outside those of its present distribution. One might, furthermore, expect that the region of previous use prior to the Aryan invasions would be in the Ganges Valley and even in the Himalayan foothills. That this demonstrates an ethnic or linguistic connection with the so-called pronominalized Himalayan languages does not, it seems to me, follow.

At present, the most that can be said with reference to the possible linguistic affinities of the Munda languages is that eventually we should expect to find some demonstrable proof of relationships to other languages somewhere. To date no such proof nor even substantial evidence either philological or grammatical is, I believe, available.

The only hopeful suggestions thus far advanced are only indirectly concerned with language, i.e., with geographical nomenclature. Some place names from various parts of north India and especially the Ganges Valley have been moderately well demonstrated to be of Munda origin. As to the racial argument, I do not believe there is any basis for believing that language and physical characteristics have any innate sympathy for each other which binds them together permanently. As to the racial data, they, too, are insufficient to form any far-reaching conclusions. Whatever may be the true linguistic picture, however, it will be necessary to consider physical characteristics separately.

RACIAL CONSIDERATIONS

As representative of the Munda, I have made use of a small series of 67 Ho Munda males measured on tea plantations in the vicinity of Jorhat, Assam. All of the men measured were originally from Chota Nagpur and had been serving on the tea plantations only a few years, usually less than three. Other Munda were measured but not in sufficient numbers to warrant use for statistical comparison. The Munda are under strict immigrational supervision in Assam and usually work by contract for from three to five years before returning to their homes in Chota Nagpur. Two samples (Manchati and Kanawri) were selected to represent the Western Complex Pronominalized dialects.[32] The Manchati series was used in preference to either the Bunan or Tinan because of the size of the sample and the relative isolation of the language and people. The series consists of 103 of whom 62 are Manchati proper or Patni living along the Chandra-Bhaga from Tandi to the Chamba State border at Thirot, and 41 are Chamba-Lahuli from the neighborhood of Triloknath and Hansi in Chamba State. These two series were first separately compared and found to be virtually identical. Linguistically, the two so-called dialects are practically indistinguishable from each other.

The sample is of adult males between the ages of twenty and sixty and represents somewhat over ten per cent of the thousand or so males of comparable age limits in the total population of about four thousand. The Manchati live below the confluence of the Chandra and Bhaga rivers and are therefore to a great extent exempt from the influences exerted by the constant procession of traders and travelers who pass through Tinan and Bunan areas on their way to and from Ladakh and India via the Rohtang Pass.

The Kanawri series of 54 was measured principally at Labrang, Kanam, Pangi, and Chini. In addition samples were collected of 41 Tinan, 53 Bunan, 40 Lahuli, and 40 Nyamkat. No Kanashi speakers were measured.

I measured only two small series of Western Complex Pronominalized Himalayan dialects of northeastern Almora, and these I have classed together as Bhotia, the local name for the people speaking the various dialects listed by Grierson. The series is composed of 90 individuals, 47 Johari (Rangkas) speakers from the Millam Valley who are generally referred to as Johari Bhotia (not to be confused with the Johari, a Central Pahari-speaking people who live below the Bhotia near the confluence of the Goriganga and Kali rivers), and 43 Dharmia-Byangsi-Chaudangsi speakers from the upper Kali Valley who are collectively called Dharmia Bhotia. Although pos-

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[31] Levi, Przyluski, and Bloch, 1929.

[32] Grierson, 1906.

Table I

COMPARATIVE MEANS

	Manchati 103	Kanawri 54	Bhotia 90	Khasi 71	Ho Munda 67
Measurements					
Weight	115.40 ± .78	115.70 ± 1.17	117.30 ± .90	111.70 ± .94	111.40 ± 1.28
Stature	162.57 ± .33	163.05 ± .59	160.47 ± .42	158.19 ± .39	159.18 ± .36
Span	170.64 ± .38	169.05 ± .59	166.83 ± .42	164.25 ± .49	168.72 ± .43
Biac.	35.42 ± .13	34.79 ± .18	35.99 ± .14	35.72 ± .13	35.93 ± .14
Biiliac	27.94 ± .13	27.54 ± .14	27.68 ± .13	26.28 ± .12	25.34 ± .15
Chest Br.	25.44 ± .13	26.22 ± .15	25.86 ± .16	24.93 ± .13	25.47 ± .12
Chest D.	21.24 ± .10	20.54 ± .12	20.70 ± .11	19.32 ± .09	19.28 ± .09
Sitt. Ht.	88.48 ± .25	85.18 ± .35	85.42 ± .25	84.76 ± .22	82.48 ± .26
Hd. Circ.	559.40 ± .90	562.25 ± .25	556.55 ± 1.29	548.90 ± 1.09	530.75 ± 1.25
Hd. L.	192.36 ± .44	191.49 ± .47	187.92 ± .47	188.31 ± .42	184.89 ± .50
Hd. Br.	143.02 ± .31	144.10 ± .40	146.11 ± .43	145.03 ± .45	135.97 ± .35
Hd. Ht.	125.42 ± .44	126.64 ± .49	125.82 ± .40	126.58 ± .41	119.46 ± .48
Min. Fr.	105.38 ± .29	103.74 ± .45	105.42 ± .33	103.10 ± .33	101.50 ± .32
Bizyg.	135.40 ± .38	135.05 ± .56	138.35 ± .43	134.60 ± .44	130.95 ± .34
Bigonial	103.14 ± .36	102.70 ± .46	104.30 ± .37	102.66 ± .50	100.50 ± .44
Tot. Face	122.45 ± .47	121.30 ± .54	121.30 ± .47	120.05 ± .44	114.35 ± .56
Up. Face	74.50 ± .36	73.20 ± .45	73.50 ± .32	70.70 ± .37	66.75 ± .32
Nose Ht.	57.86 ± .26	54.98 ± .41	56.46 ± .26	53.30 ± .28	49.58 ± .30
Nose Br.	36.68 ± .21	36.29 ± .27	37.28 ± .22	38.51 ± .19	40.37 ± .27
Indices					
Rel. Span	105.20 ± .13	103.90 ± .19	104.00 ± .14	103.76 ± .19	105.84 ± .21
Rel. Sh. Br.	21.82 ± .08	21.38 ± .12	22.54 ± .08	22.82 ± .07	22.30 ± .08
Sh.-Hip	79.41 ± .33	78.93 ± .51	76.95 ± .35	72.99 ± .24	70.98 ± .33
Thoracic	83.98 ± .40	78.26 ± .58	80.10 ± .48	77.66 ± .45	76.46 ± .38
Rel. Sitt. Ht.	52.00 ± .11	52.32 ± .14	53.30 ± .10	53.58 ± .11	51.84 ± .12
Cephalic	74.37 ± .21	75.45 ± .28	77.61 ± .26	77.07 ± .30	73.47 ± .25
L.-Ht.	65.10 ± .24	66.49 ± .28	67.02 ± .21	67.55 ± .25	64.32 ± .26
Br.-Ht.	87.41 ± .32	88.19 ± .39	86.30 ± .29	87.59 ± .33	87.50 ± .33
Fr.-Par.	74.11 ± .20	71.83 ± .25	71.86 ± .21	71.35 ± .25	74.92 ± .30
C.-F.	94.55 ± .27	93.83 ± .30	94.82 ± .25	93.02 ± .32	96.35 ± .27
Z.-Fr.	78.10 ± .22	76.98 ± .24	76.06 ± .20	76.42 ± .25	77.10 ± .23
Fr.-Gon.	97.70 ± .36	98.00 ± .51	99.20 ± .39	99.70 ± .50	99.40 ± .52
Z.-Gon.	76.21 ± .25	76.21 ± .34	75.37 ± .23	76.09 ± .33	76.36 ± .33
Facial	90.37 ± .39	89.63 ± .52	87.68 ± .35	88.89 ± .44	87.02 ± .43
Up. Fac.	54.81 ± .29	54.07 ± .38	52.91 ± .23	52.59 ± .37	51.15 ± .27
Nasal	63.79 ± .40	65.45 ± .56	66.07 ± .47	73.58 ± .43	81.63 ± .63

sessing many physical characteristics in common they are by no means identical. For the purposes of this article, however, they are "close" enough to be treated as one series.

In the case of the Mon-Khmer, the sample was of 71 Khasi from the Khasi Hills of Assam. The Khasi language is classed with the Mon-Khmer, and this series was the only one of this family measured during the course of the expedition.

The Ho Munda sample is substantially the same as the series of two hundred and fifty Ranchi Munda measured by Basu[33] in Chota Nagpur. I have, unfortunately, not been able to utilize other series for any comparative purposes whatsoever, but the few Santali I measured and the other Munda I saw were indistinguishable by casual observation from Ho and Ranchi Munda. Basu concludes that the Ranchi Munda are very closely similar to the Dravidian-speaking Oraon.[34] The most pronounced differences are a slightly lower nasal elevation and more pronounced prognathism among the Munda.

The Manchati sample does not seem to be directly comparable with the small sample of thirty

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[33] Basu, 1932–1933.

[34] Basu, 1933–1934.

Table II

COMPARATIVE STANDARD DEVIATIONS

	Manchati 103	Kanawri 54	Bhotia 90	Khasi 71	Ho Munda 67
Measurements					
Weight	11.70 ± .55	12.70 ± .82	12.70 ± .64	11.70 ± .66	11.50 ± .91
Stature	4.89 ± .23	6.39 ± .41	5.88 ± .29	4.86 ± .28	4.41 ± .26
Span	5.70 ± .27	6.45 ± .42	5.97 ± .30	6.06 ± .34	5.16 ± .30
Biac.	2.01 ± .09	1.94 ± .13	1.95 ± .10	1.56 ± .09	1.71 ± .10
Biiliac	1.86 ± .09	1.58 ± .10	1.88 ± .09	1.48 ± .08	1.82 ± .11
Chest Br.	1.95 ± .09	1.65 ± .11	2.19 ± .12	1.62 ± .09	1.50 ± .09
Chest D.	1.52 ± .07	1.36 ± .09	1.50 ± .08	1.14 ± .06	1.10 ± .06
Sitt. Ht.	3.69 ± .17	3.81 ± .25	3.48 ± .17	2.73 ± .15	3.18 ± .19
Hd. Circ.	13.50 ± .63	13.05 ± .85	18.15 ± .91	13.65 ± .77	15.15 ± .88
Hd. L.	6.60 ± .31	5.10 ± .33	6.69 ± .33	5.28 ± .30	6.12 ± .36
Hd. Br.	4.59 ± .22	4.38 ± .28	6.09 ± .30	5.61 ± .32	4.20 ± .24
Hd. Ht.	6.60 ± .63	5.32 ± .35	5.64 ± .28	5.08 ± .29	5.80 ± .34
Min. Fr.	4.40 ± .21	4.94 ± .32	4.64 ± .23	4.08 ± .23	3.92 ± .23
Bizyg.	5.70 ± .27	6.05 ± .39	6.00 ± .30	5.50 ± .31	4.10 ± .24
Bigonial	5.36 ± .25	5.00 ± .32	5.20 ± .26	6.28 ± .36	5.40 ± .31
Tot. Face	7.05 ± .33	5.85 ± .38	6.60 ± .33	5.55 ± .31	6.80 ± .40
Up. Face	5.20 ± .25	4.80 ± .32	4.55 ± .23	4.65 ± .27	3.85 ± .23
Nose Ht.	3.92 ± .18	4.48 ± .29	3.68 ± .18	3.48 ± .20	3.68 ± .21
Nose Br.	3.15 ± .15	2.91 ± .19	3.06 ± .15	2.43 ± .14	3.30 ± .19
Indices					
Rel. Span.	1.94 ± .09	2.02 ± .13	2.04 ± .10	2.36 ± .13	2.54 ± .15
Rel. Sh. Br.	1.24 ± .06	1.32 ± .09	1.14 ± .06	.92 ± .05	.92 ± .05
Sh.-Hip.	4.89 ± .23	5.58 ± .36	5.13 ± .26	2.97 ± .17	4.05 ± .24
Thoracic	5.96 ± .28	6.28 ± .41	6.72 ± .34	5.60 ± .32	4.56 ± .27
Rel. Sitt. Ht.	1.64 ± .08	1.54 ± .10	1.46 ± .07	1.38 ± .08	1.40 ± .08
Cephalic	3.21 ± .15	3.06 ± .20	3.69 ± .18	3.69 ± .21	3.03 ± .18
L.-Ht.	3.66 ± .17	3.09 ± .20	3.00 ± .15	3.09 ± .17	3.12 ± .18
Br.-Ht.	4.89 ± .23	4.29 ± .28	4.11 ± .21	4.14 ± .23	3.99 ± .23
Fr.-Par.	2.94 ± .14	2.73 ± .18	2.97 ± .15	3.18 ± .18	3.60 ± .21
C.-F.	4.05 ± .19	3.27 ± .21	3.48 ± .17	3.96 ± .22	3.24 ± .19
Z.-Fr.	3.24 ± .15	2.64 ± .17	2.88 ± .14	3.16 ± .18	2.76 ± .16
Fr.-Gon.	5.65 ± .27	5.55 ± .36	5.55 ± .28	6.25 ± .35	6.25 ± .36
Z.-Gon.	3.81 ± .18	3.66 ± .24	3.30 ± .17	4.08 ± .23	4.05 ± .24
Facial	5.80 ± .27	5.65 ± .37	4.95 ± .25	5.55 ± .31	5.25 ± .31
Up. Face	4.20 ± .20	4.02 ± .27	3.27 ± .16	4.53 ± .26	3.30 ± .19
Ne	6.08 ± .29	6.08 ± .39	6.56 ± .33	5.32 ± .30	7.64 ± .45

individuals measured by Holland[35] in Lahul and termed "Lahul Kanets." The latter series, however, is small and, as there is no indication of the languages or dialects spoken by them, it is not surprising that the few measurements given (stature, head length and breadth, and nose length and breadth) should be intermediate between the Bunan and Manchati speakers. These actually differ to a statistically noticeable degree, the Bunan following the Tibetan pattern more closely.

There is no available comparative series of measurements of the Kanawri or of the Bhotia of northeastern Almora. The so-called Eastern Complex Pronominalized Himalayan languages of Nepal have not been brought into the comparison, since the linguistic connections between these languages and the Munda-Mon-Khmer families have been less stressed. Anthropometric samples were collected from most of the language areas of Nepal,[36] however, and although the data have not been analyzed, it is my opinion that at least the Limbu and Rai will probably prove to be metrically similar to the peoples speaking non-pronominalized Himalayan languages such as

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[35] Holland, 1902.

[36] Of 1069 individuals measured from Nepal, 100 were Limbu, 102 Rai, and 66 Thami, peoples speaking languages of the Eastern Pronominalized Himalayan Branch.

Table III

COMPARATIVE COEFFICIENTS OF VARIATION

	Manchati 103	Kanawri 54	Bhotia 90	Khasi 71	Ho Munda 67
Measurements					
Weight	10.14 ± .48	10.98 ± .71	10.83 ± .54	10.47 ± .59	10.32 ± .81
Stature	3.01 ± .14	3.92 ± .25	3.66 ± .18	3.07 ± .17	2.77 ± .16
Span	3.34 ± .16	3.82 ± .24	3.57 ± .18	3.69 ± .21	3.06 ± .18
Biac.	5.67 ± .27	5.58 ± .36	5.42 ± .27	4.37 ± .25	4.76 ± .28
Biiliac	6.66 ± .31	5.74 ± .37	6.79 ± .34	5.63 ± .32	7.18 ± .42
Chest Br.	7.67 ± .36	6.29 ± .40	8.47 ± .42	6.50 ± .37	5.89 ± .34
Chest D.	7.16 ± .34	6.62 ± .43	7.25 ± .36	5.90 ± .33	5.71 ± .33
Sitt. Ht.	4.37 ± .21	4.47 ± .29	4.07 ± .20	3.22 ± .18	3.82 ± .22
Hd. Circ.	2.41 ± .11	2.32 ± .15	3.26 ± .16	2.49 ± .14	2.85 ± .17
Hd. L.	3.43 ± .16	2.66 ± .17	3.56 ± .18	2.80 ± .16	3.31 ± .55
Hd. Br.	3.21 ± .15	3.04 ± .19	4.17 ± .21	3.87 ± .22	3.09 ± .18
Hd. Ht.	5.26 ± .25	4.20 ± .28	4.48 ± .23	4.01 ± .23	4.85 ± .29
Min. Fr.	4.18 ± .19	4.76 ± .30	4.40 ± .22	3.96 ± .22	3.86 ± .22
Bizyg.	4.21 ± .19	4.48 ± .29	4.34 ± .22	4.09 ± .23	3.13 ± .18
Bigonial	5.20 ± .24	4.87 ± .31	4.99 ± .25	6.12 ± .35	5.37 ± .31
Tot. Face	5.75 ± .26	4.82 ± .30	5.44 ± .27	4.62 ± .26	5.94 ± .34
Up. Face	6.97 ± .33	6.55 ± .41	6.18 ± .30	6.58 ± .37	5.76 ± .33
Nose Ht.	6.79 ± .30	8.14 ± .50	6.52 ± .31	6.53 ± .36	7.42 ± .42
Nose Br.	8.58 ± .39	8.02 ± .51	8.21 ± .41	6.31 ± .36	8.17 ± .48
Indices					
Rel. Span.	1.84 ± .09	1.94 ± .12	1.96 ± .10	2.27 ± .13	2.40 ± .14
Rel. Sh. Br.	5.68 ± .27	6.17 ± .39	5.06 ± .25	4.03 ± .23	4.13 ± .24
Sh.-Hip	6.16 ± .29	7.07 ± .45	6.67 ± .33	4.07 ± .23	5.71 ± .33
Thoracic	7.10 ± .33	8.02 ± .51	8.39 ± .42	7.21 ± .41	5.96 ± .35
Rel. Sitt. Ht.	3.15 ± .15	2.94 ± .19	2.74 ± .14	2.56 ± .15	2.70 ± .16
Cephalic	4.32 ± .20	4.06 ± .26	4.75 ± .24	4.79 ± .27	4.12 ± .24
L.-Ht.	5.62 ± .27	4.48 ± .31	4.47 ± .23	4.42 ± .27	4.85 ± .29
Br.-Ht.	5.58 ± .26	4.85 ± .32	4.76 ± .25	4.74 ± .28	4.56 ± .27
Fr.-Par.	3.97 ± .18	3.80 ± .24	4.13 ± .21	4.46 ± .25	4.81 ± .28
C.-F.	4.28 ± .20	3.49 ± .22	3.67 ± .18	4.26 ± .24	3.36 ± .20
Z.-Fr.	4.15 ± .19	3.43 ± .22	3.79 ± .19	4.14 ± .23	3.58 ± .20
Fr.-Gon.	5.78 ± .27	5.66 ± .36	5.59 ± .28	6.27 ± .35	6.29 ± .37
Z.-Gon.	5.00 ± .23	4.80 ± .31	4.38 ± .22	5.36 ± .30	5.30 ± .31
Facial	6.51 ± .29	6.30 ± .39	5.73 ± .28	6.23 ± .34	6.03 ± .34
Up. Face	7.66 ± .36	7.43 ± .48	6.18 ± .30	8.61 ± .50	6.45 ± .39
Nasal	9.53 ± .46	9.29 ± .61	9.92 ± .51	7.23 ± .43	9.35 ± .57

Magar and Gurung, to the Bhotia of Almora, and possibly also to the Tibeto-Burman-speaking Chin and Garo of Assam.

The Khasi sample is somewhat different from that given by Guha in the "Census of India."[37] A probable explanation is to be found in the samples themselves rather than in the technique of measuring. I measured everybody who presented himself as a Khasi and whose identity was established as such by those about him. The sample collected by Guha, on the other hand, was selected with a view of eliminating people suspected of having partial Assamese or Bengali ancestry.[38] Arguments may be presented for both methods of selection, but for present purposes it is sufficient to state that the differences between Guha's sample and my series would indicate that were Guha's sample used, the contrast between it and my Munda sample would be even greater.

Standard measurements were adhered to as rigidly as factors of human equation would permit. Instruments were all made by Hermann and the eye scale was Schultz-Martin. The skin chart I especially devised for India, since no existing scale was suitable for this area. This will be described in detail in a study of the peoples of northern India which I am at present undertaking. For immediate purposes I have condensed the

[37] Guha, 1935.

[38] Verbal communication.

Table IV

SIGNIFICANCE RATIOS

(x.p.e.'s)

	Munda–Manchati	Munda–Kanawri	Munda–Bhotia	Munda–Khasi	Khasi–Manchati	Khasi–Kanawri	Khasi–Bhotia	Bhotia–Manchati	Bhotia–Kanawri	Kanawri–Manchati
Measurements										
Weight	3	2	4	0	3	3	4	2	1	0
Stature	7	6	2	2	9	7	4	4	4	1
Span	3	0	3	7	10	6	4	7	3	2
Biac.	3	5	0	1	2	4	1	3	5	3
Biiliac	15	11	12	6	12	7	8	3	1	2
Chest Br.	0	4	2	3	3	6	4	2	2	4
Chest D.	14	9	10	0	14	9	10	4	1	5
Sitt. Ht.	6	6	8	7	1	1	2	3	1	2
Hd. Circ.	19	18	14	11	7	8	5	2	3	2
Hd. L.	11	10	4	5	7	5	1	7	5	1
Hd. Br.	15	15	18	16	4	2	2	6	3	2
Hd. Ht.	9	10	10	11	2	0	1	1	1	2
Min. Fr.	9	4	9	3	5	1	5	0	3	3
Bizyg.	9	6	13	7	1	1	6	5	5	0
Bigonial	5	3	7	3	1	0	3	2	3	1
Tot. Face	11	9	10	8	4	2	2	2	0	2
Up. Face	16	12	15	8	7	4	6	2	1	2
Nose Ht.	21	11	17	9	12	3	8	4	3	6
Nose Br.	11	11	9	6	7	7	4	2	3	1
Indices										
Rel. Span	3	7	8	7	6	1	1	6	0	5
Rel. Sh. Br.	3	7	2	5	10	14	3	5	8	3
Sh.-Hip	18	13	12	5	16	10	9	5	3	1
Thoracic	14	3	6	2	11	1	4	6	2	8
Rel. Sitt. Ht.	1	3	10	12	11	7	2	9	5	2
Cephalic	3	5	12	9	8	4	1	10	6	3
L.-Ht.	2	3	7	8	6	4	1	5	3	2
Br.-Ht.	0	1	4	1	0	1	3	4	4	1
Fr.-Par.	2	8	9	9	9	1	2	8	0	7
C.-Fac.	5	6	4	8	4	2	5	1	3	2
Z.-Fr.	3	0	3	2	5	2	1	7	3	3
Fr.-Gon.	3	2	0	0	3	2	1	3	2	0
Z.-Gon.	0	0	2	1	0	0	2	3	2	0
Facial	5	4	0	4	1	0	4	6	4	0
Up. Face	18	13	14	4	11	8	7	6	2	2
Nasal	23	17	18	12	14	8	9	4	0	4

colors used into descriptive verbal equivalents, since the differences are great enough to be thus compared.

I have simplified the statistical analysis and have made no attempt to break down any of the series into possible morphological type variations. I have made no use of correlations, contingencies, or the coefficient of racial likeness. The tables have been reduced as much as possible. In order not to confuse the comparison too much, the measurements and indices were treated first, while the observations (given in percentages to the nearest unit) were separately compared.

I personally question the reliability of the methods of comparison at present accepted as standard. I am by no means convinced that similarity of form or statistical closeness of samples implies a numerically obtainable degree of racial "closeness" or "relationship." I am rather definitely convinced, however, that, if two samples display radical dissimilarity (statistically defined) in a predominant number of measurements and great differences in percentile distributions of observations, race identity or near identity is out of the question.

The question arises as to the reliability of sampling. It is quite probable that individuals occur in any two samples used here who would be relatively similar in metric and even in non-measured factors. The only function which the following data serve, therefore, is to demonstrate that the Munda are on the whole, metrically and in observed traits, quite distinct from any of the other comparative series as determined on the basis of the random sample method of comparison. It does not demonstrate that individuals or individual traits may not occur which may someday be proven identical.

In order to make clear the differences in the various categories and to emphasize the relative statistical similarities and dissimilarities, tables 1, 2, 3 have been prepared giving the means, standard deviations, and coefficients of variation of eighteen measurements and sixteen indices for each series. Differences between means expressed in terms of the probable error[39] between all pairs of series for each measurement and index are given in table IV (Significance Ratios).

Table V gives the statistical constants for age for the different series.

Table V

AGE

	N	M	σ	V
Manchati	103	36.65 ± .90	13.65 ± .63	37.24 ± 1.74
Kanawri	54	37.85 ± 1.08	11.85 ± .76	31.31 ± 2.00
Bhotia	90	37.00 ± 1.01	14.20 ± .71	38.38 ± 1.92
Khasi	71	26.60 ± .74	9.25 ± .52	31.25 ± 1.77
Ho Munda	67	32.65 ± .62	7.75 ± .45	23.73 ± 1.38

The Khasi and Ho Munda samples are not only the youngest but also the most homogeneous in age. It is possible that this may partly explain their relative homogeneity in the metric traits, and their less advanced age may play an important part in establishing some of the differences in the various measurements and observations in the various series.

Inter-Series Comparisons

Body build is separately considered as an observation in table VI. Visual appraisal of body build is at best a poor substitute for measurements of body heights and breadths and cannot be considered as reliable.

The Khasi have the highest percentages of lateral (stocky) build, while practically half of the Kanawri and 38 per cent of the Manchati are of linear (slender) build. The Munda and Bhotia are concentrated in the medium category.

Table VI

BODY BUILD

(Percentage frequencies)

	Manchati	Kanawri	Bhotia	Khasi	Ho Munda
Linear	38	48	12	7	28
Medium	60	48	76	68	56
Lateral	2	4	12	25	16
	100	100	100	100	100

In tables I to IV it is apparent that the Manchati and Kanawri are similar in most measurements and indices, the primary differences appearing in such factors as chest measurements, nasal height, fronto-parietal index, and relative span. Compared by means, the Kanawri have slightly broader and shallower chests, are slightly taller, and have relatively shorter arm spans in relation to stature than have the Manchati. The Kanawri nose is slightly shorter, although almost as broad as that of the Manchati, and the forehead is somewhat narrower in proportion to the breadth of the head. On the whole, however, these are comparatively minor variations of what may possibly be a basic type substantially the same in both language areas. The fundamental similarity is borne out by a comparison of either of these series with any of the others. In almost every case differences when they occur are in the same measurements or indices and of approximately the same degree.

In the case of the Bhotia of Almora, a comparison with the Manchati and the Kanawri shows that the Bhotia have more factors similar to the former than to the latter. This is especially true of head length and breadth, various face indices, relative span and sitting height, chest measurements and nasal index. Furthermore, the differences are not only in the same categories or traits but represent merely increases of the differences noted between the Bhotia and Manchati over those existing between the Kanawri and the Manchati. It would seem probable, therefore, that in body and head measurements the Kanawri are more or less intermediate between the Bhotia and the Manchati. By coincidence this corresponds roughly also to their geographical positions.

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[39] Probable error of a difference between two means is the square root of the summed squares of the probable errors of the two means being compared. If the difference itself equals or exceeds three times its own probable error, then it is held to be statistically significant. The "Significance Ratios" or "x.p.e.'s" of table IV are the quotients obtained by dividing each difference by its own probable error.

As to the similarity of the Manchati, Kanawri, and Bhotia with reference to the Khasi, in almost every measurement and index employed the Manchati-Kanawri (considered together to facilitate comparison) show statistically significant differences from the Khasi. The Bhotia, on the other hand, in those things in which they show differences from either the Manchati or Kanawri, are similar to the Khasi. This is true of most of the head measurements. Actually, in the case of the cephalic index the Bhotia have shorter and broader heads and indicially surpass the Khasi. The Khasi seem to show on the whole a closer similarity to the Bhotia than to either the Kanawri or the Manchati and are dissimilar in as many characters from the Manchati.

So far as specific measurements are concerned, the Khasi are shorter, have a higher relative sitting height, relatively narrower hips, slightly shallower chests than the Manchati. In head measurements the Khasi have shorter and narrower noses, shorter upper and total face heights, somewhat smaller and relatively rounder heads.

As to the position of the Ho Munda, it is quite apparent that in almost every measurement and most of the indices the differences between them and any of the other groups are highly significant. The most striking differences are in nasal measurements, head length and breadth, head height and circumference, minimum frontal diameter, and general body proportions such as relative sitting height, thoracic measurements, and shoulder measurements.

Table IV graphically demonstrates these differences. The figures have been given to the nearest units with decimal places dropped in order to facilitate a quick comparison.

It will be seen that the largest number of statistically significant differences (Significance Ratios) and the highest figures exist between the Munda and Manchati. These are most striking for nasal and head measurements.

Tables giving the standard deviations and the coefficients of variation (tables II and III) indicate that the Ho Munda and the Khasi are consistently more homogeneous than the other series. In six and seven measurements out of nineteen, respectively, they have the lowest standard deviations and coefficients of variation. Greatest variability occurs in only one each. Conversely, the Bhotia and Manchati are most variable in five measurements each and least variable in only one. The Kanawri are intermediate with greatest variability in seven and least in four.

High standard deviations give some indication of homogeneity, and it seems clear that the Khasi and Ho Munda are the most homogeneous and appear to be about equally matched. The Kanawri are in a number of measurements relatively homogeneous and in still more measurements are extremely variable. The Manchati and Bhotia are consistently quite variable. As pointed out above, however, age may be of considerable importance in determining the different degrees of variability. Just what degree is probably impossible to determine.

Although tables for modality in frequency dispersions for the various measurements and indices are not appended here, the distributions of variability follow expectations. The Kanawri and Bhotia actually show considerable tendency toward bimodal dispersion while the Manchati are erratic. The Ho Mundas and Khasi, on the other hand, show considerable conformity to an ideal distribution.

Non-Metric Observations

In non-metric observations only those were selected which showed the greatest differences in percental distributions between the Munda and other series. With the exception of eye color, which is almost universally dark brown, the traits listed in table VII are those generally given and usually considered, rightly or wrongly, to be racially most significant. In further analysis of material to appear later sixty other observations are taken into consideration.

Skin Color. Differences in skin color of the inner surface of the arm are quite striking. Table 7 illustrates the extreme difference between the Bhotia and the Munda. Summarized in a more conclusive way, it may be said that 90 per cent of the Bhotia have moderately light skin color, approximately 95 per cent of both the Manchati and Kanawri have medium to yellowish-brown pigmentation, 90 per cent of the Khasi have similar coloration with a larger percentage of yellow-browns and an additional 8 per cent in the medium brown category, whereas the Munda show 100 per cent between the yellow-brown and

Table VII

	Manchati	Kanawri	Bhotia	Khasi	Ho Munda
Skin Color					
Pink-Lt. Brun.	6	4	23	1	0
Lt. Red Brown	34	33	57	25	0
Lt. Brown	32	43	2	20	0
Yellow Brown	28	20	15	45	15
Medium Brown	0	0	2	8	21
Dark Brown	0	0	0	0	64
Hair Form					
Straight	1	11	39	42	6
Low Wavy	61	48	53	48	26
Deep Wave	20	24	6	4	27
Curly	18	17	2	6	35
Very Curly	0	0	0	0	6
Inner Eyefold					
Absent	70	82	35	35	94
Present	30	18	65	65	6
Submedium	9	9	16	34	6
Medium	14	7	23	15	0
Pronounced	7	2	26	14	0
Membranous Lip Thickness					
Submedium	15	2	13	3	0
Medium	80	98	83	92	69
Pronounced	5	0	3	7	31
Very Pronounced	0	0	0	0	0
Nasal Profile					
Concave	11	4	18	25	27
Straight	76	81	80	70	61
Convex	13	15	2	4	12
Nasal Root Breadth					
Submedium	6	0	1	0	0
Medium	40	72	58	49	31
Pronounced	57	28	38	49	67
Very Pronounced	0	0	3	1	1
Forehead Slope					
Forward	0	0	0	0	0
Absent	1	0	0	0	0
Submedium	32	24	24	48	19
Medium	54	74	64	49	67
Pronounced	13	2	11	3	13

	Manchati	Kanawri	Bhotia	Khasi	Ho Munda
Midfacial Prognathism					
Absent	15	44	24	44	54
Submedium	49	35	50	48	40
Medium	35	20	26	8	6
Pronounced	1	0	0	0	0
Gonial Flare[a]					
Submedium	9	6	9	24	4
Medium	63	67	52	42	55
Pronounced	27	28	37	28	36
Very Pronounced	1	0	2	6	4
Browridges					
Absent	0	2	0	0	0
Submedium	24	15	22	21	4
Medium	46	65	39	62	19
Pronounced	30	19	38	17	69
Very Pronounced	0	0	1	0	7
Hair Color					
Black	40	60	75	68	75
V. Dk. Br.-Black	50	29	22	20	10
Dark Brown	8	11	3	12	15
Brown	0	0	0	0	0
Red. Brown	2	0	0	0	0
Lt. Brown	0	0	0	0	0
Beard Quantity					
Submedium	40	41	59	91	55
Medium	22	37	33	8	39
Pronounced	30	20	8	1	6
Very pronounced	8	2	0	0	0
Obliquity of Palpebral Opening					
Down	1	0	0	1	0
Absent	80	81	48	73	93
Up Submedium	17	19	43	25	7
Up Medium	2	0	9	0	0
Up Pronounced	0	0	0	0	0
Shoveled Incisors					
Absent	45	67	24	18	78
Present	55	33	75	82	22
Submedium	6	0	7	25	17
Medium	29	27	24	25	2
Pronounced	20	6	44	32	3

Table VII (*Continued*)

	Manchati	Kanawri	Bhotia	Khasi	Ho Munda
Nasal Bridge Height					
Submedium	2	0	8	14	10
Medium	57	69	81	80	84
Pronounced	41	30	11	6	6
Nasion Depression					
Absent	0	0	1	0	0
Submedium	14	13	6	1	1
Medium	45	70	61	46	22
Pronounced	41	17	32	52	60
Very Pronounced	0	0	0	0	16
Temporal Fullness					
Submedium	12	35	16	20	28
Medium	64	50	44	56	70
Pronounced	24	15	40	24	1

	Manchati	Kanawri	Bhotia	Khasi	Ho Munda
Alveolar Prognathism					
Absent	17	35	13	38	37
Submedium	67	39	31	21	22
Medium	16	26	53	35	34
Pronounced	0	0	2	6	6
Lateral Malar Projection					
Submedium	10	6	1	0	0
Medium	53	78	44	51	66
Pronounced	37	17	54	49	34
Very Pronounced	0	0	0	0	0
Occipital Protrusion					
Absent	27	48	73	42	25
Submedium	46	20	21	27	16
Medium	27	26	6	25	34
Pronounced	0	6	0	6	24

dark brown categories, two-thirds of the total falling in the latter category. This is striking evidence of the darker pigmentation of the Munda, whose percentage distributions in the various categories are so markedly different from any of the other groups.

Hair Color. The most striking thing about hair color is the relatively low percentages of "practically black" hair among the Bhotia and Munda. It is exceedingly difficult to determine when pure black is encountered. The use of occasional dyes, oils, and other toilet articles, differences in light intensity at the time of observation, and length of the hair vary judgment in the field considerably. Often people with short cut hair, especially common among the Bhotia, for example, do not show the slight brownish or reddish color which is usually present even in people with "black" hair. For this reason the figures given cannot be considered accurate. They probably give some approximation to true color variation.

Hair Form. Hair form further illustrates the great difference between the Munda and the other groups. Among the former 41 per cent have either curly or almost frizzly[40] hair (the latter in 6 per cent of the individuals) and 53 per cent have varying degrees of wavy hair. Among the Manchati and Kanawri only 17 to 18 per cent have curly hair, none has frizzly hair, only somewhat over 20 per cent have deep wavy, and half or more fall into the low wavy category. In the case of the Kanawri, 11 per cent actually have straight hair. The greatest contrast is to be noted with the Khasi and Bhotia, both of whom have approximately 40 per cent straight hair and 50 per cent low wavy hair.

Beard Quantity. In beard quantity the Bhotia, in contrast to the Khasi with whom they agree in so many other characteristics, have an unusually high percentage of medium amount of beard (33 per cent), and the distributions are strikingly close to those of the Munda. The Khasi, however, show over 90 per cent with slight beards. At the opposite extreme, the Manchati and Kanawri both have the same general category distributions with from 20 to 30 per cent possessing a pronounced amount of beard hair and few individuals with heavy beards.

Inner Eyefold. The distributions of varying degrees of inner eyefold are also quite instructive. Among the Munda only 6 per cent show any trace of the inner fold, whereas among the Bhotia and Khasi it is present in 65 per cent of the individuals. Among the Manchati and Kanawri the fold is present in approximately a quarter of the population. The distribution is irregular, with several individuals exhibiting medium or pronounced degrees of the fold.

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[40] No truly frizzly hair was observed among any of the Munda.

Obliquity of Palpebral Opening. In the axis of the palpebral opening of the eye, the figures follow rather closely the pattern of inner eyefold distribution with the exception of the Khasi, in whom only a quarter of the population possess a certain amount of obliquity, whereas among the Bhotia the figure runs to more than half. The Munda again show an absence in over 90 per cent of the population and the Manchati and Kanawri register absences in 80 per cent of the cases.

Membranous Lip Thickness. Membranous lip thickness is present to a pronounced degree in 31 per cent of the Munda, in only 7 per cent of the Khasi, 3 per cent of the Bhotia, 5 per cent of the Manchati, and is entirely absent among the Kanawri. Correspondingly, in all groups except the Munda some individuals are noted with a submedium degree of lip thickness.

Shoveled Incisors. Hollowed depressions on the lingual surfaces of the median and lateral incisors occur to a pronounced degree in 32 per cent and 44 per cent of the Khasi and Bhotia, respectively, and are entirely absent in only about 20 per cent of the individuals. Among the Manchati and Kanawri the figures for total absence are much higher (45 per cent and 67 per cent respectively), whereas among the Munda 78 per cent fail to show any signs of a depression and only 22 per cent possess it in any degree. Of these, 17 per cent show it only slightly.

Nasal Profile. Nasal profile exhibits rather an uneven distribution, the Munda showing almost as high a percentage of convex profiles as the Manchati and Kanawri. In concave noses, however, the percentage of the Munda totals more than one-quarter of the population. The Bhotia and Khasi figures are quite close to each other for the three categories, show the lowest percentages of convex noses, and approach the Munda in the percentage of concave noses.

Nasal Bridge Height. In the case of nasal bridge height the groups fall into two divisions, the Manchati and Kanawri showing approximately two-thirds of the individuals with medium bridge heights and one-third with pronouncedly high nose bridges. Of the Bhotia, Khasi, and Munda, on the other hand, about three-quarters have medium height bridges, approximately 10 per cent have low nasal bridges, and only from 6 to 11 per cent are in the pronouncedly high category.

Nasal Root Breadth. In the case of nasal root breadth, the Munda show two-thirds of the individuals with pronounced root breadths, whereas among the Bhotia and Khasi only about half are above medium and in the case of the Kanawri only 28 per cent. The Manchati show a surprisingly high percentage in the pronounced category, but it must be remembered that the Manchati also registered 41 per cent pronouncedly high nasal bridges, whereas among the Munda the figure was only 6 per cent. The former, therefore, while possessing relatively broad nasal root breadths, have also very high noses, which is not the case with the Munda.

Nasion Depression. One of the most distinctive features of the percental distributions of the degrees of nasion depression is the relatively high figure, 16 per cent, in the very pronounced category in the case of the Munda. In contrast, the other groups have half or more of their individuals in the medium and submedium categories, whereas among the Munda the total for these columns is slightly less than one-quarter of the population.

Forehead Slope. In forehead slope the Khasi are quite distinctive, with approximately one-half in the submedium category and one-half in the medium category. The other groups tend to concentrate in the medium category, with from 19 to 32 per cent in the submedium grade and 2 to 13 per cent above medium. Only one individual (a Manchati) showed a total absence, and none was noted with a forward slope.

Temporal Fullness. Temporal fullness to a pronounced degree is noticeably absent among the Munda, while the highest percentages of marked fulness occur among the Bhotia. The other groups are intermediate.

Midfacial Prognathism. The Munda register only 46 per cent with any degree of midfacial prognathism, whereas the Manchati possess it in 85 per cent of the cases. The remaining groups are intermediate and are concentrated in the absent and submedium categories.

Alveolar Prognathism. Contrary to general supposition, the Munda exhibit a relatively high degree of absence of alveolar prognathism (37 per cent), and the percentage distributions for the various categories practically duplicate those for the Khasi. The highest percentage of presence is found in the Bhotia, among whom 87 per cent possess some degree of prognathism. Although the percentage in the absent column is high in the case of the Munda, the medium and excessive categories total 40 per cent, whereas among the Manchati and Kanawri the percentages are 16 and 26 respectively. The individuals in the Manchati group tend to cluster around the submedium category and the Kanawri concentrate rather equally in the absent and submedium columns.

Gonial Flare. In the case of gonial flare, the Khasi is the only really distinctive group. The distribution is quite irregular as compared with the other groups, with the largest figures in both the submedium and very pronounced categories.

Lateral Malar Projection. The Khasi and the Bhotia show higher percentages of pronounced lateral malar projection, with approximately half in the medium category and half pronounced. The lowest figure in the pronounced column is among the Khasi, with 17 per cent. The Munda and Manchati register 34 per cent and 37 per cent, respectively, although the latter also have 10 per cent in the submedium category as opposed to none in the case of the Munda.

Browridges. One of the most distinctive features of the Munda is the large number of individuals with pronounced browridges (69 per cent pronounced and 7 per cent excessive), with 76 per cent of the individuals above the mean.

Occipital Protrusion. The most important single characteristic of the Munda cranium is probably the high percentage of individuals with marked occipital protrusion (58 per cent medium or pronounced). The Bhotia, on the other hand, show 73 per cent with no noticeable protrusion, while the Khasi, Kanawri, and Manchati are variously intermediate.

Series Descriptions

Ho Munda. With reference to the other series under consideration, the Ho Munda may be described as of relatively medium stature, with medium shoulder breadth, narrow hips, quite shallow but not especially narrow chests, and relatively long legs in proportion to stature. Body build, on the whole, is linear (slender) to medium.

The head is small in circumference, rather short in length, and also quite narrow with a low cephalic index. The frontal region is medium to narrow and the cranial vault quite low. The diameter between the zygomatic arches as well as the bigonial diameter is narrow. The upper face height is quite short with a low upper facial index, but a relatively high lower facial length increases the total face length sufficiently to offset the shortening of the upper face and to give a total facial index approximately the same as in the other series.

Skin color is, on the whole, quite dark, hair form is predominantly very deeply waved or curly, with some individuals approaching but never attaining a frizzly condition. Beard quantity is usually sparse.

The inner fold of the eye is absent in almost all individuals and obliquity of the palpebral opening is also negligible in occurrence. The lips are very often pronouncedly thick, and shovel incisors are comparatively scarce. Prognathism, both midfacial and alveolar, is only moderately common.

The nasal profile is often concave but more often straight; the bridge height is in most cases medium, and the root of the nose is generally pronouncedly broad. There is also marked nasion depression. Forehead slope is generally medium, as are mandibular flare and lateral projection of the malars.

The browridges are, in general, exceedingly prominent; there is considerable lack of temporal fulness, and usually very pronounced occipital protrusion.

Khasi. The Khasi are relatively brachycephalic, the higher cephalic index being attributable to shortening rather than to increase in breadth. The head is moderately high. The main distinctive features are the increase in Mongoloid factors, such as straightness and relative blackness of hair, shoveling of incisors, and frequent occurrence of the inner eyefold. Beard quantity is rather universally sparse.

Bhotia. The Bhotia, as compared with the other series, are of medium stature, medium span, and medium relative arm length. The chest measurements are likewise medium, and so is the predominant type of body build. In both sitting height and relative sitting height, as well as in relative shoulder breadth and shoulder-hip index, the Bhotia are intermediate.

The most important differences lie in the head region. Head breadth is absolutely and relatively the greatest, while head circumference and height are intermediate. The most pronounced characters are the extremely broad face and quite broad lower jaw. Both total face and upper face heights are intermediate, but the facial index is low, as are also the zygo-gonial and zygo-frontal indices.

In non-metric characters, skin color is, on the whole, quite light; hair form tends to be straight or low-wavy, beard quantity moderately sparse, and hair color predominantly black. The most characteristic features are the high percentage of inner eyefolds and the rather high frequency of slight palpebral opening obliquity. Associated with these factors is a very high occurrence of shoveled incisors, lips of only medium thickness, generally rather straight noses of medium height with medium nasal root breadth, and a moderately high proportion of individuals with pronounced nasion depression. Forehead slope is generally medium, but a high percentage of individuals have excessive temporal fulness. There is considerable alveolar prognathism, some midfacial prognathism, rather extensive lateral malar projection, and an intermediate position in gonial flare. Browridges are, on the whole, intermediate. Occipital protrusion is generally absent.

Kanawri. The Kanawri have the highest mean stature, with quite low relative sitting height and low relative span. The nose is high, narrow, and often convex. Mean total face height is quite high, with the height primarily in the upper facial region.

The non-metric factors are very similar to those of the Manchati whom they closely resemble.

Manchati. Like the Kanawri, the Manchati are, on the whole, tall, rather long-faced, narrow and high-nosed, with considerable bridge convexity. The skin varies from light brown to yellow brown; the hair is generally dark brown and low-waved. Beard quantity is often pronounced and the inner eyefold is generally absent. Eye obliquity is usually absent; lips are of medium or submedium thickness, and the incisors are shoveled in about half the population. Prognathism is noticeable in both the midfacial and alveolar regions.

SUMMARY AND CONCLUSIONS

Various theories have been advanced concerning the position of the Munda languages with respect to other linguistic families. The Schmidt school contends that a fundamental relationship exists with the Mon-Khmer languages and also with the Western Complex Himalayan Branch of the Tibeto-Burman family. The theory assumes that at some remote time, probably before the coming of the Dravidians and certainly prior to the Aryan invasions, the ancestors of the Munda spread westward from their homeland in southeast Asia and settled in the Ganges Valley well up into the Himalayas. Gradually, they were displaced or absorbed by incoming foreigners until today only the Munda proper of Chota Nagpur retain a semblance of the old Munda language and traces of it are to be found in the Himalayas. Material cultural evidence for this theory is suggested by the coincidental occurrence of shouldered celts in most of the areas supposed to have been inhabited by Munda speakers.[41]

Another theory recently revived by v. Hevesy suggests a basic Finno-Ugric relationship with Munda, although he notes a stronger connection between Finno-Ugric and the Himalayan languages.

Furthermore, the occurrence of geographical place names of probable Munda origin has tended to corroborate the general belief that most of the Ganges basin was once inhabited by Munda-speaking peoples. Such is the substance of the main linguistic arguments.

It has further been assumed, but certainly not demonstrated either by Schmidt or v. Eickstedt, that there is a common physical relationship among the Munda, the Khasi (Mon speakers in Assam), and other Mon and Khmer speakers of southeast Asia.

In reaching such sweeping conclusions a great many factors have been overlooked. To be sure, some attention has been paid to the material and social culture of the Munda and their possible similarities to cultures of southeast Asia. This has not been attempted, however, with the Himalayan language groups. I am not prepared to summarize either the material or social culture of any of the Himalayan peoples, but it is my belief that they would show practically nothing in common with the cultures of any of the Munda or Mon-Khmer speakers.[42]

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[41] I do not believe any have been found in the Himalayas.

[42] It is my impression that the square-roofed stone and wood houses with overhanging verandas, the particular carved door panels and lintels, dress (especially the cymbal-shaped skull caps with rolled rims), footwear, and a number of articles of household economy suggest a more plausible material cultural similarity with north Kashmir, the Gilgit Agency and adjacent parts of the northwest Frontier Province. Environment and type of economy are also comparable, if not in most cases closely similar. A comparative study of these two areas for social as well as material parallels is a separate undertaking. It should be added also that practically nothing is known of the Himalayan languages. Certainly, no one has seriously considered the possibility of a relationship between them and the languages of the areas suggested above.

As to the physical characteristics, it can be said quite definitely that the Manchati and Kanawri at least are radically different from the Munda. It is hardly in the scope of this paper to compare the Himalayan-speaking peoples with those of northernmost India, but I believe such a comparison might demonstrate a considerable similarity. Certainly the Bhotia and Khasi, as well as the Munda, are very significantly different from the western Himalayan speakers.

Among the Manchati, I believe that those physical characters which are usually associated with Mongoloid peoples, such as shoveled incisors and inner eyefolds, are largely if not entirely due to intermixture with Tibetans. Triloknath, in Chamba-Lahul (lower Manchati in Chamba State), is a spot sacred to Lamaists as well as Hindus, and here are usually to be seen a number of Buddhist pilgrims from Tibet and Nepal. Just north of the Manchati are Tibetans who live in the upper valleys. The Bunan-speaking neighbors of the Manchati are unquestionably very much mixed with Tibetans. Many Bunan speakers are of half Tibetan parentage and have Tibetan mates. To a lesser extent this applies also to the Tinan. Here, however, the Tibetan influences have come largely from Spiti (see map 5) rather than from Ladakh. Just to the east of the Tinan area is a small transplanted colony of Spiti Tibetan speakers at the village of Koksar.

The combined physical and material-social cultural factors certainly do not even remotely suggest any possible relationship with the Munda. I did not see anyone in the Himalayan area who could possibly be considered "Munda-looking."

The linguistic "evidence" is also far from satisfactory in demonstrating even a substratum relationship with the Munda languages. Admittedly, the languages are largely Tibeto-Burman and have only a few possible connecting links with Munda. Furthermore, there seem to be just about as many equally unsatisfactory points connecting them with Finno-Ugric. In view of such confusion, it seems to me highly advisable to withdraw the Himalayan languages from any further confusion with the Munda family until more is known at least of the former.

The Bhotia definitely possess a very large number of Mongoloid characteristics but this is due, I believe, to a great deal of mixture with Tibeto-Burman-speaking peoples from northern Nepal (Nepal Bhotia) who have moved westward into northeast Almora. To a certain extent, also, these same Tibeto-Burman speakers have penetrated from the East as well as the North into Kanawri country. The material and social culture of the Almora Bhotia may prove to be similar to that of parts of Nepal, Garhwal, and to a less extent, northern Tehri and Bashahr.

Among the Bhotia can be seen a large number of individuals who might pass for Kanawri and some who are similar to Manchati. There are none, however, who are like Munda.

Linguistically, it is quite possible that the Himalayan dialects of Almora may be related to those of the Kanawri and Manchati-Bunan-Tinan. Physically, there is still a certain amount of resemblance as shown through the presence of similar appearing individuals, especially in the Chaudangsi area.

Concerning the Khasi and Munda languages and physical characteristics, much more is known than is the case with the Himalayan peoples.[43] I do not feel that there is yet sufficient evidence to demonstrate conclusively that the Munda family is related to the Mon and Khmer languages.

Even if linguistic kinship were to be proven, however, this would not prove the existence of any racial connection. Everything points to the contrary. Occasional individuals who have varying degrees of Mongoloid characteristics may be present, as v. Eickstedt[44] asserts, but even he believes that such admixture is recent. I am of the opinion that there is no higher percentage of such individuals than is present among other peoples in neighboring regions of Bengal and Assam. This, I believe, is also true with reference to Mongol pigment patches mentioned by Basu[45] and Bodding.[46]

The only possible valid racial connecting link, of which I am aware, between the Munda and Khasi and also between the Munda and Bhotia, Kanawri or Manchati is that there have filtered into all of these populations a certain number of people from the neighboring Indo-European-speaking areas. These are decidedly in the minority, however, and I believe are directly due to fairly recent admixture.

A great deal more comparative work, not only in language but also in material and social culture as well as in racial studies, must be undertaken before Pater Schmidt's or v. Hevesy's or anyone else's pronouncements can be accepted. I am most strongly convinced, furthermore, that so far as the Himalayan peoples are concerned, the speculations in the linguistic field thus far attempted are exceedingly unsatisfactory.

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[43] See also Risley, 1891.

[44] Eickstedt, 1928.

[45] Basu, 1932–1933.

[46] Bodding, 1904.

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X

EVOLUTIONARY TRENDS IN BODY BUILD

Data from Thailand (Siam)

James M. Andrews, IV

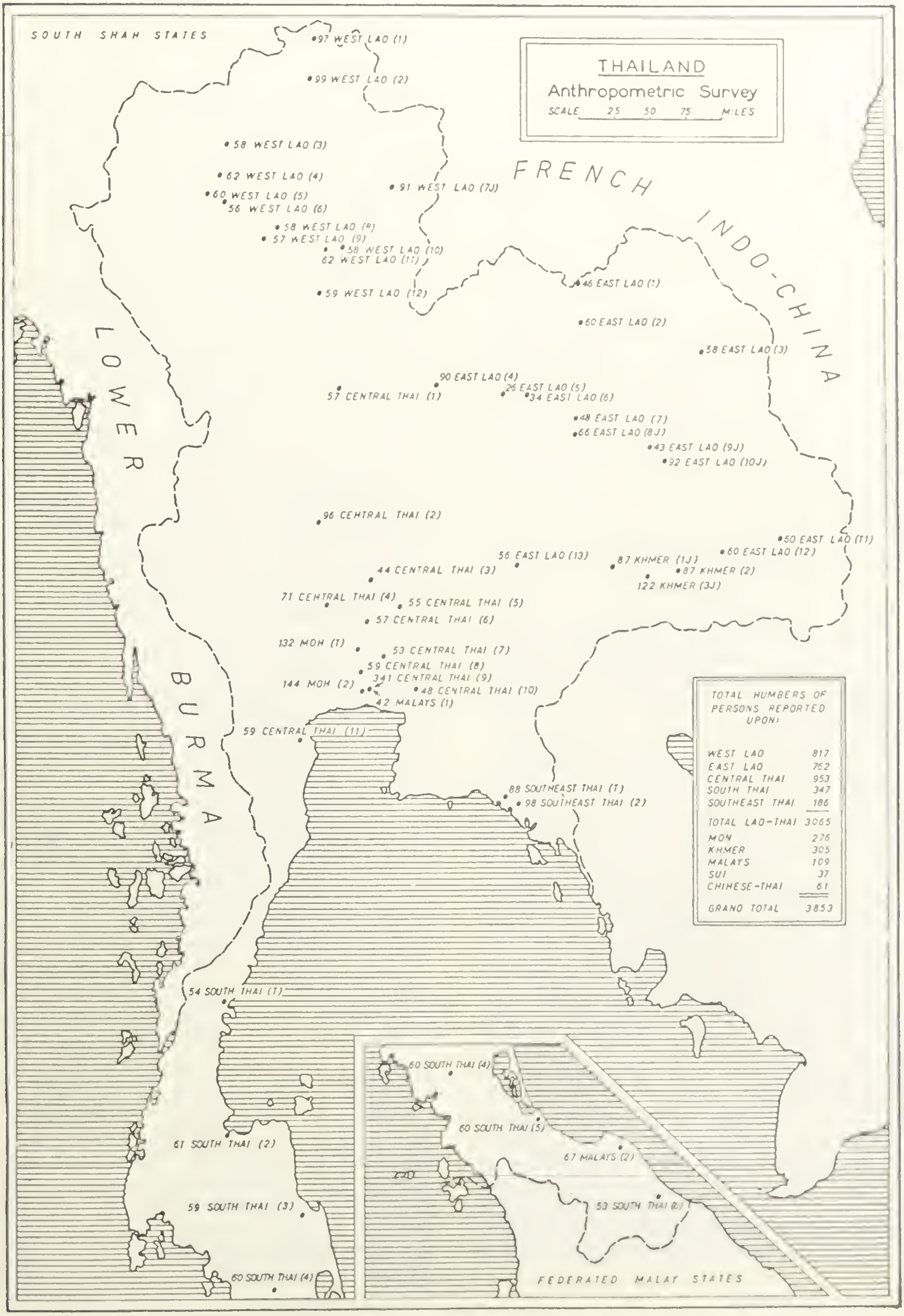
ANTHROPOMETRIC measurements of nearly four thousand Siamese, collected in 1934–1935, have revealed differences in body build between the Lao-Thai of the northern part of the country and those of the central plains which it is not feasible to ascribe to the effects of race mixture, and which show a number of striking resemblances to the findings of other studies in areas as far distant from Thailand as New England and Hawaii. It is my object in the present paper to discuss these unexpected similarities, to make clear the objections to any interpretation of the Siamese data in terms of race mixture, and to hypothecate a pattern of evolutionary change in physique which, judging from available evidence, may operate in all races of men in response to stimuli of an environmental, perhaps chiefly nutritional, nature.

The figures which supply a point of departure for the following discussion are derived from measurements of living adult Siamese males of several different linguistic stocks. They were collected as a secondary aspect of an investigation into the rural economies of Siam which was performed under the joint auspices of the Thailand Government and Harvard University in 1934–1935. A full description of the sampling processes employed, of the economic conclusions of the Survey, and of my own deep indebtedness to the Siamese people and their governmental officials will be found in the publication referred to in the bibliography at the end of this paper under "Andrews, 1935."

Adequacy of the geographic sampling may be appraised on the accompanying map 6. The anthropometric subjects were selected at random from the populations of small communities a few miles away from the nearest market centers except in the case of a few series, designated by "J" on the map, which were taken at random from among the inmates of provincial jails. Except for the Chinese-Thai, who are first generation offspring of Chinese fathers and Thai mothers, every subject included in the analysis spoke the same dialect as had both parents, and had been born and was living in the same geographic area as both parents. Thus, the several subseries plotted on the map may be considered well-defined in terms of language and place of origin. Socially and economically, all subjects may be regarded as farmers. Those few of them who, in fact, derived more income from artisanship, trading, or fishing than from agriculture were sons of rice farmers and brothers of rice farmers, living by the same nutritional and other standards as their kin. It is unlikely that any age factor need be considered in interpreting the data, for no subject was included in the analysis who had not attained his twentieth year (in the occidental system of reckoning age), and average age of the several series to be discussed ranged only from 31.15 to 34.75 years. Statistical treatment of the field records was performed by the Anthropometric Laboratory of the Peabody Museum of Harvard University, utilizing the same techniques as were applied to the two studies which are chiefly drawn upon for comparative purposes by the present paper.

It is the body measurements alone which form the subject of the following discussion, and they will be presented in full only for the Central Thai and West Lao. In order that the presentation of anthropometric data for these two peoples may be complete, the means for their head and face dimensions and proportions, and the morphological observations on their pigment, hair form, eyefolds, and the like are given in the form of appended tables, which will be found at the end of the paper.

Most of the actual body measurements, with the exception of shoulder widths, were made by a Siamese medical officer, Nai Chun Chompunij, under my close supervision. I myself measured nearly all shoulder widths and occasionally supplanted Nai Chun, usually for checking purposes, in the other measurements. Techniques employed were in accord with standard anthropometric practice as defined under the following index



MAP 6. THAILAND, ANTHROPOMETRIC SURVEY.

Showing the geographic provenience of the subjects measured and reported upon by the Survey. All samples except those designated by the letter "J" are random selections from single small villages; those marked with a "J" are samples drawn at random from among the inmates of provincial jails. All subjects are adult males.

numbers in Martin:[1] stature (1) without shoes; span (17); sitting height (23, using a table, with the subject's legs not pendant but lightly supported on a chair), shoulder width (35), hip width (40, "biiliac diameter"); chest width (36); chest depth (anteroposterior diameter, taken with upper end of anthropometer, in the same slightly tilted plane as chest breadth and chest girth); chest girth (61), and weight (without allowance for clothing which varied little from subject to subject and may have weighed half a kilo on the average). Subjects were nude above the waist, or wore thin cotton shirts or singlets. Light under-drawers and a sarong type of loin cloth completed their costumes. Neither the statistical constants derived from the field records nor my own self-searching suggest that the data to be discussed owe anything of importance to personal idiosyncrasies in measurement technique.

HISTORICAL BACKGROUND OF THE SIAMESE PEOPLES

In order to interpret the anthropometric data, it is necessary to know as much about the history and environment of the subjects as can be gleaned from evidence which necessarily deals in terms of language and culture.

Linguistically and culturally, the Lao and Thai of today differ very little from one another. Historically, both trace their origin to the Ai-Lao of Yunnan who, probably as early as the sixth century B.C., occupied the Lake Erh Hai region between the Yangtse Kiang and the Mekong where the two great rivers are separated by a span of little more than a hundred miles. Between the second and seventh centuries A.D. they developed into the great kingdom known as Nan Chao, and in the following centuries they expanded west, south, and east along the routes opened to them by the rivers which fan out from the southern Yunnan focus. To the west, first in the Shweli Valley and then throughout much of North Burma, they settled and came to be known as the Shan. To the east they spread into the Red-Black River system where they exist today, chiefly in isolated upper valleys of the tributaries, as aliens among the predominant Annamites and Chinese. Directly south, in the valleys of the Menam and the Mekong, the Lao-Thai supplanted the Mon, the Khmer, and the various folk of Indonesian culture who preceded them, and occupied the good rice lands of what are today Thailand and French Laos. No date can be set for the beginning of the Thai infiltration, but it may be said to have been completed about 1350 A.D. with the foundation of Ayuthia and the conquest of Angkor, the great capital city of the Khmers in Cambodia, about two years later.

There is every reason to believe that the forebears of West Lao and Thai (but not of East Lao) entered the present kingdom of Thailand by the same route. Moving down the valley of the Mekong in Yunnan, they diverged from the great river where it meets the northernmost boundary of Siam today. At that place, the Mekong swings sharply round in a hairpin turn to the north and receives two sizeable tributaries from the south. Continuing south, up the valleys of the tributaries, the ancestors of West Lao and Thai were led by easy stages into the land which they called "Lan-na,"—"Million Rice Fields,"—an Asiatic equivalent of our "land flowing with milk and honey." From "Lan-na," North Thailand, they overspread most of their present day territory within the space of a few hundred years. The Thai of the Menam Valley and of the Malay Peninsula may thus be regarded as the present day descendants of the West Lao's precursors. There can be little doubt that they have been subject to more race mixture than the West Lao, for many of the latter presumably entered "Lan-na" after it had been pretty well mopped up by the Thai—but the slight differences between them in language and culture may be ascribed for the most part to the several centuries during which North and South Thailand had separate capital cities and indulged in almost constant military expeditions against each other.

The route followed by the people now known as East Lao in entering Thailand and French Laos is known with less certainty, but it does appear sure that they came from Yunnan via Indo-China through the valley of the upper Black River, that their first settlements were in the upper valley of the Nam Hu, and that they came to the banks of the Mekong by following the Nam Hu to its junction with the great river. Today they occupy most of East Thailand and of French Laos. Culturally, they more nearly resemble the West Lao than they do the Central Thai, and it is supposed that this suggestion of closer kinship is reinforced by their speech. Unfortunately, I know of no satisfactory comparative study of the Lao-Thai dialects.

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[1] Martin, 1914–1928.

The conclusions to be drawn from this brief summary of the historical evidence are, I believe:

(1) The Lao and Thai peoples of Thailand have a common origin, are closely akin to each other in language and culture, and must be presumed to be closely akin genetically unless contrary evidence can be adduced.

(2) The Central Thai, having traveled further from the homeland than the West Lao, have almost certainly been exposed to more race mixture with peoples of alien speech and culture. The peoples with whom this miscegenation must have taken place are the various Indonesian tribes, the Mon, the Khmer, and the Malays and Chinese immigrants who have come into the area in more recent times.

(3) The West Lao, though it would be idle to regard them as racially "pure," have probably undergone less race mixture with alien peoples than the Central Thai, and it is reasonably safe to regard them as closer to the ancestral Lao-Thai physical type than the latter. Such race mixture as they have experienced is likely to have been for the most part with Indonesians, Mon, and Khmer.

(4) The East Lao are less easy to appraise, for the route which they have followed in coming into southeast Asia is less well known. Certainly, they have been exposed to mixture with Khmer and with Indonesian and possibly even Negrito precursors of the Khmer. The area which they inhabit has never been densely populated by Mon, Malays, or Chinese, and these elements in their racial background may probably be disregarded.

(5) The South Thai, occupying peninsular Siam, have been exposed to race mixture with more different peoples, and greater quantities of them, than any other branch of the Lao-Thai peoples in southeast Asia. Indonesians, Mon, Khmer, Negritos, Malays, and Chinese are almost sure to have added their quotas to the genetic constitution of the people.

THE ANALYSIS OF ANTHROPOMETRIC DATA FOR EVIDENCE OF RACE MIXTURE

In searching anthropometric data for the evidence of race mixture which is believed historically to have taken place and, per contra, in investigating a body of data with the object of constructing a hypothetical pattern of racial origins and mixture to account for the subjects, anthropologists make almost exclusive use of a single unproven hypothesis—the assumption that a mixed people will yield average values for physical traits which are intermediate between the mean values for the same traits in the two parental stocks. No proof or disproof of the assumption is possible in any race mixture study which has so far been made, for if one measures a people who are known to be the product of race mixture, it is almost invariably the case that the parental stocks responsible for the miscegenation are no longer available for study in their pristine "purity," and it becomes necessary to estimate, usually from the data of other observers on other peoples, what the mean values for the parental stocks are most likely to have been. Thus, in a classic study of race mixture we find Boer-Hottentot crosses being compared with averages for 8 male and 8 female Hottentots on the one hand, and for 100 soldiers of Baden on the other. Plainly, the comparison rests on shaky foundations. No study of race mixture which has so far been published is wholly free of similar or equally pause-giving faults—faults of which it should be said that the authors are always deeply conscious. The acid test for the hypothesis will not be at hand until some fortunate (and indefatigable) anthropologist is able to measure a large number of families in which both parents are living and in which the offspring are fully adult.

Thus, the "A plus B over 2" hypothesis remains unproven, is not infrequently attacked by searchers after truth, and is universally utilized by those who still have the courage to theorize about race and race mixture. But justification for using it is not wholly wanting, for the best available evidence is in general confirmatory. Averages for mixed peoples are more often intermediate between those estimated for the parental stocks than they are above or below, and they are in general no more often above than below. Dominance of greater over lesser dimensions, or the contrary, has not been proven for any part of the human body save a few hereditary abnormalities which, fortunately, are seldom seen. In what is probably the best available body of evidence for study of inheritance of metric traits, Boas[2] has shown that mean cephalic index of offspring is almost exactly intermediate between the figures for their parents (and that variability in the index among offspring is roughly proportionate to the amount of difference between the parents). Regrettably, the data are available only for cephalic index, but the demonstration in that trait is so clear that one is little inclined to look askance at the age and sex "corrections" which Boas found it necessary to use.

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[2] Boas, 1933.

Thus, for the metric traits we are far better justified in using the "A plus B over 2" hypothesis than any other. We are, in fact, obliged to use it, if we wish to theorize at all about evidence of race mixture in metric traits.

BODY BUILD OF THE SIAMESE PEOPLES

In table I will be found the constants for stature of the Siamese peoples.

Average stature of 815 West Lao, the Lao-Thai people of North Siam, is 160.61 centimeters, and that of 762 East Lao, the Lao-Thai of East Siam, is 160.91. The difference between them is significant, both statistically and biologically.

In distinct contrast is the figure of 163.35 for 952 Central Thai, inhabitants of the Menam Valley. The Lao-Thai of Central Siam are on the average about an inch taller than their cousins of the north and east. The difference is highly significant, and it demands explanation.

The first question to be asked is whether these averages reflect genuinely contrasted physical statuses in the different areas or, alternatively, whether they may not be simply the statistical result of lumping together the peoples of large geographic areas in such a way as to obscure the fact that there are no real lines of demarcation between them but rather a general trend of increasing stature from north to south, and perhaps from east to west.

The answer to this query is in no doubt. The evidence indicates that there does exist a line of demarcation in stature which parallels the geographic and linguistic differentiations employed in analyzing the data. From north to south, in the same order in which they are numbered on the map, the West Lao communities yield the following averages: 160.27, 160.31, 161.87, 159.49, 159.09 164.63, 160.53, 161.05, 158.07, 160.95, 161.65, and 160.07. Save for the exceptional sixth village group (which, perhaps only by coincidence, was the most nearly urban of the lot), the range of the means is only from 158.07 to 161.87. A wholly similar situation is found in the East Lao area, where the range of the subserial averages is only from 158.07 to 162.55. The Thai communities of the Menam Valley, however, yield quite a different picture. Their means, again in the order in which they are numbered on the map, are: 163.45, 162.71, 162.17, 163.43, 164.23, 162.59, 162.79, 163.49, 163.39, 165.65, and 163.73. Without laboring the point, for the subserial averages are necessarily based on rather small samples, we may note that 57 subjects of

TABLE I

STATURE IN THAILAND (SIAM)

N	Mean	S.D.	V.
Lao-Thai Peoples			
815 West Lao	160.61 ± 0.13	5.38 ± 0.09	3.35 ± 0.06
762 East Lao	160.91 ± 0.14	5.58 ± 0.10	3.47 ± 0.06
952 Central Thai	163.35 ± 0.12	5.44 ± 0.08	3.33 ± 0.05
347 South Thai	161.43 ± 0.18	5.06 ± 0.13	3.14 ± 0.08
186 Southeast Thai	162.07 ± 0.24	4.88 ± 0.17	3.02 ± 0.11
Other Peoples			
274 Mon	162.87 ± 0.22	5.36 ± 0.15	3.29 ± 0.09
305 Khmer	161.07 ± 0.20	5.10 ± 0.14	3.17 ± 0.09
42 Malays[1]	164.33 ± 0.52	5.00 ± 0.37	3.04 ± 0.22
67 Malays[2]	159.39 ± 0.39	4.70 ± 0.27	2.95 ± 0.17
37 Sui*	160.57 ± 0.55	4.96 ± 0.39	3.09 ± 0.24
61 Chinese-Thai	164.38 ± 0.45	5.19 ± 0.32	3.16 ± 0.19

[1] 42 Malays measured near Bangkok in the Central Thai area.

[2] 67 Malays measured near Pattani in the South Thai area.

* Nothing is known with any certainty about the linguistic, historical, and cultural affiliations of the people calling themselves "Sui" or "Kui," who inhabit the Korat plateau in the East Lao area. Due to this circumstance, and to the small number of them who were measured by the Survey, they are not mentioned in the accompanying text.

the northernmost Central Thai village had an average stature of 163.45 ± 0.45; 59 males of the southernmost West Lao community gave 160.07 ± 0.41; and 90 individuals of the westernmost East Lao village gave a mean of 161.07 ± 0.40. Employing the usual level of three times the probable error as a test of statistical significance, we find that the East and West Lao villages do not differ significantly from one another in stature, and that both are significantly lower than the Central Thai community which is distant only about a hundred miles. We may safely conclude that the Lao-Thai population of the Menam Valley is distinctly taller than the closely related Lao populations of North and East Siam.

Is it feasible to interpret the greater height of the Central Thai as a consequence of race mixture? The several possibilities of this nature must be considered individually.

Race mixture with a people taller than either Lao or Thai might account for the phenomenon, if it could be shown that the Central Thai had ever been exposed to miscegenation with such a people, but this is not the case. None of the peoples with whom it seems likely that the Thai may have interbred extensively is taller than the Thai.

We can only speculate regarding the stature of the peoples who may have occupied southeast Asia before the rise of the Mon kingdom of Dvaravati and the Khmer kingdom of Cambodia, but it is generally believed that these peoples were shorter than either Mon or Khmer. Mean stature for 264 Mon living in the same area as the Central Thai is 162.87—the two separate communities being 162.71 and 163.03—and there is no reason to suppose that the Mon of earlier years were any taller than are their descendants. Three hundred and five Khmer living among the East Lao yield an average stature of 161.07—the 3 subseries ranging from 160.43 to 161.75—and again there is no reason to suppose that their ancestors were any taller. It seems clear that the greater stature of Central Thai is not due to interbreeding between their ancestors and those of the Mon, the Khmer, or their precursors.

The Survey's figures for Malays are remarkable and call for special comment. Only two groups of these people were measured, and they gave totally different means not only for stature but also for nearly all body dimensions. Average stature of 67 Malays who were measured deep down in the peninsula, near Siam's southern frontier, was 159.39 ± 0.39. The figure differs scarcely at all from that obtained for Thai of the same area and agrees well with those reported by other writers for other Malays. Thus, we have for Malays of peninsular Siam 159.7,[3] of Malaya proper 159.4,[4] of the eastern littoral of Sumatra 162.05,[5] and of Central Sumatra 157.64 and 158.03.[6] In sharp contrast to those of the peninsula, the 42 Malays studied near Bangkok yielded a mean stature of 164.33 ± 0.52. The Malays of the Central Thai area appear to be taller than any others who have been reliably reported,[7] and they do not differ significantly, in statistical terms, either from the total Central Thai series or from any of its component subseries. Malays of peninsular Siam do not differ in stature from Thai of the same area: Malays of Central Siam do not differ in stature from Thai of that area.

I conclude that the Malays of peninsular Thailand differ little in body size from the generality of Malays; that the Malays in general differ little from Lao and from Thai of the peninsula; that race mixture with Malays will not account for the higher stature found among the Thai of the Menam Valley; and that those Malays who have settled in the Menam Valley have experienced an increase in body size quite comparable to that which is found in the Thai of the same region. Though the evidence is less conclusive than in the case of the Thai, it is at least compatible with the data to suggest that the same or closely similar causes may have been responsible for both increases.

The only other people with whom it seems at all likely that the Thai may have interbred more extensively than the Lao are the Chinese of the southeast coastal regions of China, who, for the

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[3] Annandale and Robinson, 1902.

[4] Annandale and Robinson, 1902.

[5] Hagen, 1890. Based on only twenty-one individuals and incorrectly published in the original volume as 162.5.

[6] Kleiweg de Zwaan, 1910.

[7] The extraordinary figure of 175.75 which is quoted by Martin 1914–1928, p. 255, for Malays of Central Sumatra will not bear investigation, Martin's too terse reference for this figure, "Kleiweg de Zwaan und Maas," presumably refers to the monumental study published by A. Maas in 1910, entitled "Durch Zentral Sumatra," and containing an anthropometric section by Kleiweg de Zwaan. The latter authority states (vol 2, pt. 1, pp. 49–50) that the tallest single individual of 569 whom he measured was 173 centimeters in height, and that the averages for his two series from different localities in Central Sumatra were 157.64 and 158.03.

Table II

BODY DIMENSIONS OF WEST LAO AND CENTRAL THAI

N	Mean	S.D.	V.
West Lao			
816 Age (in years)	32.65		
768 Weight (in Kilos)	50.60 ± 0.13	5.46	10.79
815 Stature	160.61 ± 0.13	5.38	3.35
814 Span	167.28 ± 0.16	6.57	3.93
815 Sitting Height	85.54 ± 0.07	2.97	3.47
814 Shoulder Breadth	36.41 ± 0.05	1.95	5.36
814 Hip Breadth	26.56 ± 0.03	1.40	5.27
815 Chest Breadth	25.08 ± 0.04	1.56	6.22
817 Chest Depth	18.76 ± 0.03	1.38	7.36
817 Chest Girth	80.38 ± 0.09	3.70	4.60
Central Thai			
951 Age (in years)	32.60		
949 Weight (in Kilos)	53.48 ± 0.13	5.84	10.92
952 Stature	163.35 ± 0.12	5.44	3.33
947 Span	171.30 ± 0.15	6.78	3.96
951 Sitting Height	86.98 ± 0.07	3.03	3.48
944 Shoulder Breadth	37.49 ± 0.04	1.92	5.12
948 Hip Breadth	26.98 ± 0.03	1.48	5.53
951 Chest Breadth	25.98 ± 0.04	1.65	6.35
950 Chest Depth	18.94 ± 0.03	1.32	6.97
949 Chest Girth	82.06 ± 0.09	3.90	4.75

past ten centuries at least, have been coming to southeast Asia by sea to engage in trade, to settle, and in many cases to intermarry with the native peoples. And, once again, it seems highly improbable that these immigrants are taller than the Central Thai, for Hagen[8] has compiled the records of 5,383 of them, aged 30 to 39, whose stature was ascertained by medical officers in Penang and Singapore and found to give an average of 162.25 centimeters. Finally, in analyzing its records, the Survey found that it had measured 61 adult male offspring of Chinese fathers and Thai mothers in various villages of southern, central, and southeastern Siam. Their average stature was 164.38 ± 0.45—a figure which is not significantly higher than that for Central Thai.

There remains a single remote possibility which must be considered under the heading of race mixture; i.e., heterosis: the hybrid vigor and increased body size which are known to occur in the first generation offspring of hybridization experiments with some animals and plants, and which have several times been reported as consequences of interbreeding between different human races.

There are insuperable objections to any interpretation of the increased size of Central Thai in terms of heterosis. (1) Only a very small proportion of the Siamese population consists of first generation offspring of interracial matings, and the long continued miscegenation of hybrids is held on theoretical grounds to be a deterrent to the manifestation of heterosis. Many generations have intervened since the Central Thai were newcomers in the land and were, presumably, mating with folk of alien speech and heritage. Race mixture studies in like cases generally show stature means which are intermediate between those assumed for the parental stocks and appear no more likely to give averages above those of both parental stocks than below. Also, it may be noted that the figures already quoted for Chinese-Thai, who are first generation offspring of racial intermarriages, give scant confirmation of the heterosis which might plausibly be looked for in them. (2) If it be held that heterosis might somehow have become "established" among the Central Thai—that it may remain even after the passage of many generations as a factor to be taken into account—then an explanation must be sought for the fact that Thai of the peninsula, who have been exposed to even more race mixture than the Central Thai, yield a stature mean of only 161.43—scarcely greater than that of the Lao.

I conclude that there is no explanation in terms of race mixture which will account satisfactorily for the fact that Central Thai are distinctly taller than West Lao. Examination of the figures for other body dimensions, carried out in each case along the same lines as those employed in analyzing stature, has led to the following further conclusions: (See tables II and III.)

1. The Central Thai are not merely taller than the West Lao: they are bigger in every body dimension which the Survey's calipers were able to measure, and all the differences are statistically significant. Shoulder width and span are significantly greater relative to stature. The thoracic and shoulder-hip indices are conspicuously lower, indicating a flatter chest form and a breadth of hips which is distinctly smaller relative to the breadth of shoulders. The decline in hip width and the increase in leg length relative to stature are inappreciable.
2. None of the differences in body build between West Lao and Central Thai can be interpreted as a result of race mixture between the latter and Malays.

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[8] Hagen, 1890, pp. 100–102.

3. Only the chest dimensions could be regarded as a possible consequence of race mixture with Mon or Khmer, and even in these cases the race mixture hypothesis is contradicted by a number of the subserial averages.

4. Absence of adequate comparative data prohibits a specific statement with regard to the possibility of an interpretation in terms of race mixture with Chinese.

5. The line of demarcation between West Lao and Central Thai which was established by comparing stature averages of the two communities which are nearest each other is reaffirmed by the averages for all other body dimensions.

6. Just as the Thai of the Menam rice plains are bigger in all body dimensions than their kin in North Thailand, so the Malays of the lower Menam Valley are larger in all body dimensions than their kin in the peninsula. Due to the small number of Malays who were measured, the differences between the two series cannot for the most part be held to have statistical significance, but conspicuous declines of 2.07 units in the shoulder-hip index and 2.48 in the thoracic cannot be regarded as likely consequences of the hazards of random sampling. They afford reason for believing that body build proportions of the Malays in Central Siam have been modified in the same ways as those of the Lao-Thai in the same area.

TABLE III

BODY PROPORTIONS OF WEST LAO AND CENTRAL THAI

N		Mean	S.D.	V.
	West Lao			
812	Relative Span	104.08 ± 0.06	2.38	2.29
815	Rel. Sitting Ht.	53.28 ± 0.03	1.32	2.48
812	Rel. Shoulder Br.	22.64 ± 0.03	1.04	4.59
814	Rel. Hip Breadth	16.52 ± 0.02	0.70	4.24
	Rel. Chest Br.	15.62* —	—	—
	Rel. Chest Depth	11.68* —	—	—
	Rel. Chest Girth	50.05* —	—	—
810	Shoulder-Hip Index	72.93 ± 0.09	3.90	5.35
815	Thoracic Index	74.62 ± 0.11	4.64	6.22
	Index of Body Fullness (Weight/Stature)	1.22* —	—	—
	Central Thai			
947	Relative Span	104.82 ± 0.05	2.44	2.33
951	Rel. Sitting Ht.	53.24 ± 0.03	1.24	2.33
943	Rel. Shoulder Br.	22.88 ± 0.03	1.14	4.98
947	Rel. Hip Breadth	16.48 ± 0.02	0.76	4.61
	Rel. Chest Br.	15.90* —	—	—
	Rel. Chest Depth	11.59* —	—	—
	Rel. Chest Girth	50.24* —	—	—
940	Shoulder-Hip Index	72.03 ± 0.09	4.08	5.66
950	Thoracic Index	73.06 ± 0.11	4.96	6.78
	Index of Body Fullness (Weight/Stature)	1.23* —	—	—

* Indices marked with the asterisk have been computed from means for the dimensions on which they are based.

The conclusion that race mixture may not be considered the cause of differences in body build between Central Thai and West Lao is not to be misread as a conclusion that these two peoples are today racially homogeneous, or that there exist between them *no* differences which seem likely to have a genetic origin. The evidence from body build on this point is purely negative. That the two peoples do differ genetically is a conclusion to be drawn from the historical evidence already presented—evidence which indicates a strong probability that the Thai have undergone more extensive race mixture than the Lao—and there is little doubt in my mind that many differences between them in head and face proportions and in the nonmetric morphological traits are partially assignable to these genetic differences. But the probability that race mixture with less Mongoloid peoples is responsible for the less frequent appearance of Mongoloid eyefolds in Thai than in Lao has no necessary bearing on differences between them in stature. It is compatible with historical evidence to postulate race mixture between Thai and less Mongoloid peoples, but it is not compatible to hypothecate race mixture with taller peoples. Except insofar as two traits may be known to be correlated, every physical character must be appraised on its own merits. A difference between A and B in eye color may be known to be hereditary, but this in itself is no proof that a difference between them in skin color is similarly genetic in origin. It may be that A has a darker skin because he has been heavily tanned by sunshine, and the probability that this is the case is much enhanced, if it can be shown that A's ancestors and B's ancestors did not differ in skin color.

DIFFERENCES IN ENVIRONMENT

If race mixture cannot be held responsible for the changes in body build which have been experienced by the Central Thai, then it appears that an explanation must be sought in environmental terms. We must look for factors of nongenetic origin to account for the modifications observed.

In dealing with environmental agencies, the anthropologist necessarily departs from the field of his own presumptive competence to enter another in which he is qualified to theorize only in the broadest and most diffident terms. Precise description of environmental differences must be the work of climatologists, geologists, botanists, and economists. Analysis of the possible effects of environmental agencies on human physique must be handled on the basis of experimental evidence by physiologists. Nonetheless, the anthropologist whose data suggest the possible operation of environmental agencies is not absolved by his incompetence from presenting tentative opinions as to the nature of these agencies. The progress of science would be slow indeed if the biologist dared not suggest to the chemist problems in which the latter's special competence might lead to useful conclusions.

Nearly all the available evidence on Siamese environment has been summarized by Credner.[9] Geological, climatological, and botanical differences between one region and another are described, but it seems to me that no one of these differences is so likely to have played an important part in differentiating physique as is the difference noted between the diets of Lao and Thai.

Though both peoples subsist chiefly on rice, the rice upon which they depend is of two quite different types. The Lao live on glutinous rice, a cereal which is all but indigestible for all, including Thai, who have not been inured to it from early infancy. The Thai live almost wholly on the ordinary rice of commerce, and use glutinous rice only for the confection of occasional desserts with palm sugar. It was made abundantly plain to me, in the course of the Survey's several months in Lao country, that large quantities of glutinous rice induce internal rebellion and external gloom in Bangkok Thai to a notable degree—only slightly less, in fact, than in myself. The converse does not appear to be true. The Lao cheerfully eats ordinary rice whenever it is available, and with no untoward effects, but he shows little tendency to cultivate it in preference to the glutinous rice with whose habits he is more familiar.

Their dependence on a different staff of life may have something to do with the greater body size of the Central Thai, but such an hypothesis is open to objections of which the chief is that Thai of the Malay Peninsula, who also live on ordinary rice, are not on the average significantly taller than East or West Lao. I believe that a better hypothesis is corollary.

Due to the disinclination of most human constitutions to endure glutinous rice, the Lao have no effective commercial market for their chief crop. They grow glutinous rice for their own requirements, but they can sell little of it and they, therefore, have little income in cash or barterable goods with which to purchase supplemental foods. Most Lao obtain salt, condiments, and dried fish by purchase or barter, but they cannot buy more than a bare minimum of such items and their side dishes consist for the most part of such fruits and vegetables as they raise or collect themselves, and such fish as they can catch.

Most Thai, on the other hand, cultivate ordinary rice to the almost complete exclusion of other plants; they sell a large part of each crop after harvest and obtain supplemental foods throughout the year by purchase or barter. The economic investigations of the Thailand Survey led to the conclusion that the average household of Central Siam spends annually almost three times as much as the West Lao for foods which are not produced at home.[10] The only study of Siamese diet known to me indicates a per capita consumption of proteins and salts by the Central Thai which is nearly double that of the Lao[11] The same study indicates that Thai of the Peninsula consume slightly more salt and slightly less protein per capita than the Central Thai, but it agrees with mine in showing an average *expenditure* for food, in cash and barter, which is about the same for South Thai and West Lao and which, in these peoples, is only about one-half or one-third the expenditure made by Central Thai for the same purpose. (East Lao spend least of all for food.)

Though there may be other effective environmental agencies which I have not considered, I believe it is feasible on the evidence presented to hypothecate the greater diversity of foods available to the Central Thai, because of their economic habits, as the stimulus in response to which they have gained in general body size and have experienced significant changes in their physical proportions. They have grown taller and heavier. Shoulder breadth and chest breadth have increased

[9] Credner, 1935.

[10] Andrews, 1935, pp. 204–205.

[11] Zimmerman, 1931, p. 279.

proportionately more than stature, while relative breadth of the hips and relative depth of the chest have, if anything, decreased. The Thai have become more "masculine" in their proportions; they are more "broad-shouldered" and more "slim waisted," and their chests are "flatter." The diagnostic indices are the shoulder-hip and thoracic ratios, both of which show conspicuous declines.

ENVIRONMENTAL STUDIES IN NEW ENGLAND AND HAWAII

It is not only in Siam that changes in physique have been observed which cannot be accounted for in terms of race mixture, and for which an explanation has been sought in environmental agencies. Bowles[12] described a number of physical changes which were taking place in the population of New England, and Shapiro[13] reported extensive changes in the physique of Japanese who had settled in Hawaii. Surprisingly, the figures reported by the two authors reveal the existence of closely similar trends in body build in the two different peoples—a striking fact which was first called to my attention by Dr. Carl Seltzer—and a trait by trait comparison shows that the changes which have been described in Central Thai conform to much the same pattern. Both Bowles and Shapiro suggested nutritional changes among other environmental agencies which might account for their findings. Change in diet, then, may be regarded as a common denominator of the three studies, and the inference that all races of men may respond in similar fashion to the stimulus of a more abundant or more diversified food supply merits elaboration.

The figures published by Bowles are based on measurements made over a period of many years by New England college authorities on their students. His male series consists of 399 "Harvard Fathers," who had been measured while they were students at Harvard, and of 481 sons of these fathers who were measured years later when they themselves were students at Harvard. Practically all were of families which had been settled in New England for two or three generations and who traced their ancestry back to British and German origins. Occupationally, the great majority of both fathers (90 per cent) and sons (98 per cent) engaged in business and professional activities.

Bowles's female series consist of records drawn from the files of four New England colleges for women, and include the measurements of 501 mothers and their 570 daughters, all of whom had been measured when of college age. Racially and socially the female series is closely comparable to the male.

The chief defects of Bowles's data—defects which must be born in mind in interpreting the figures—are (1) that many of the measurements were not made in accord with standard anthropometric technique as generally accepted today, and (2) that the measurements were made by many different observers whose techniques are unlikely to have been perfectly comparable in all cases. However, since both male and female series, measured by totally different observers, yield essentially similar results, we are probably justified in holding that the technical defects referred to have not appreciably diminished the general validity of the data.

Shapiro reports on measurements made in accord with standard anthropometric technique by a single observer working, in 1931–1932, in Hawaii and Japan. The series includes 188 male and 91 female Japanese who had been born and were living in Hawaii; of 178 males and 93 female Japanese "Immigrants" who had been born in Japan but who had migrated, presumably as young adults, to Hawaii; and of 172 male and 91 female Japanese "Sedentes," blood relatives of the Hawaiian-born and Immigrants, who had been born and were still living in Japan.

Chief defects of the data, aside from the not very generous size of the female samples, are (1) that no precise information is given as to the age at which the Immigrants moved to Hawaii, and (2) that the Hawaiian-born are so much younger than the other groups (from 9.40 to 14.45 years in the different comparisons) that a very considerable age factor must be born in mind as a possible complicating factor in the comparisons which involve them. None of the subjects, however, is less than 20 years old.

In order that the similarities and dissimilarities between the patterns of change reported by Bowles, Shapiro, and myself may be readily apparent, the data of all three studies, involving four male and three female comparisons, have been diagramed in the accompanying fig. 2. In connection with the principles used in con-

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[12] Bowles, 1932.

[13] Shapiro, 1939.

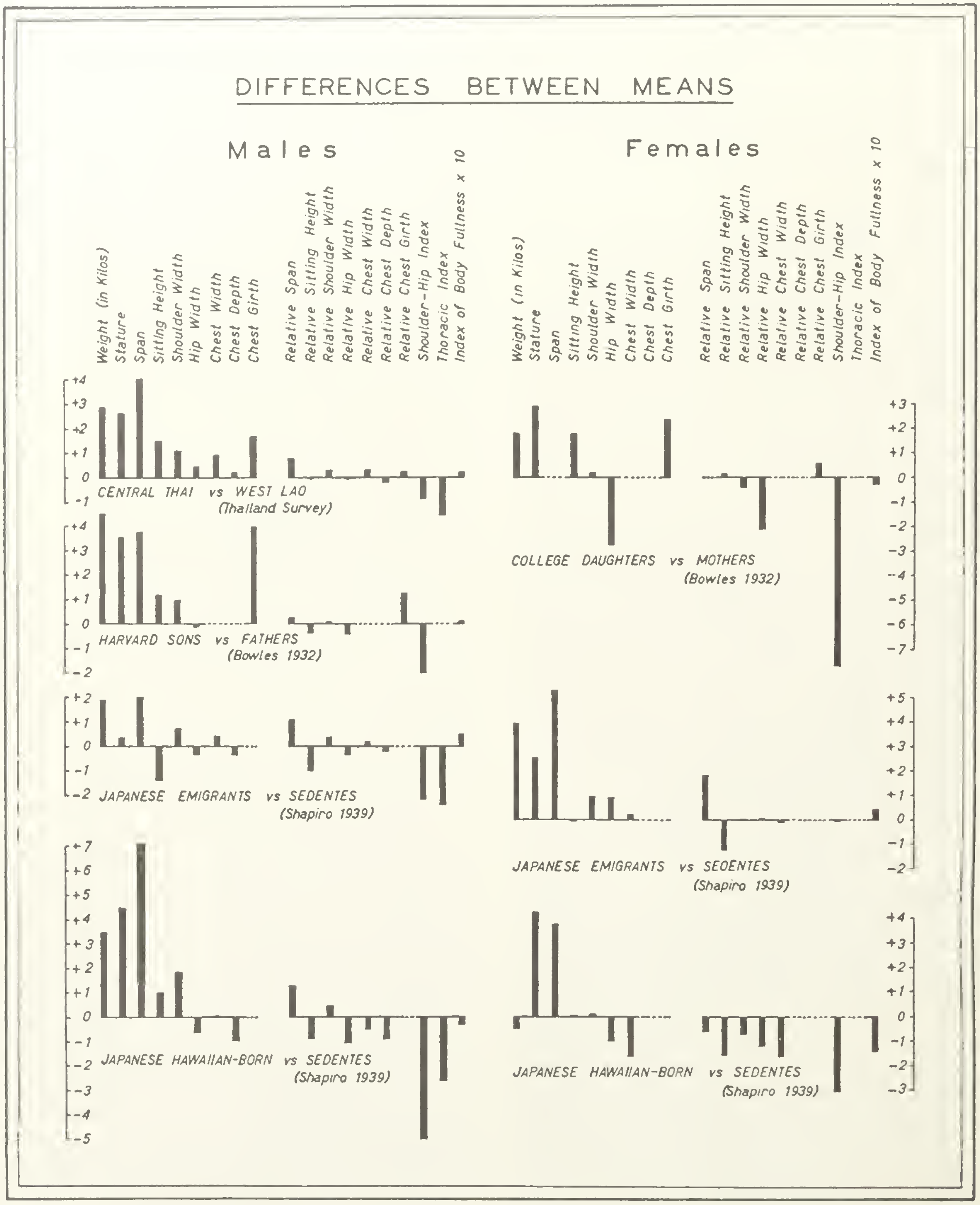

Fig. 2. Growth changes, differences between means in Thailand and comparative series.

structing the figure, the following points are to be noted.

There has been no selection of physical traits in drawing the chart: all the information on body build of the West Lao and Central Thai has been diagramed, and all the data in the Bowles and Shapiro studies for the same physical traits have been utilized. The information is presented in the form of differences between means. Averages for the second-named of the two groups involved in each comparison are used as a base line, and means for the first-named are shown as departures therefrom in centimeters or index units. Thus, in the upper left-hand diagram, averages for the West Lao are used as a base line and those of the Central Thai are shown as differences above or below the line. It is apparent by inspection that Central Thai are bigger in all body dimensions than the West Lao, and that they differ in body proportions chiefly by having a greater relative span[14] and distinctly lower thoracic and shoulder-hip indices.

No "corrections" for age differences or other complicating factors have been imbedded in the figures. The only liberties taken with the data of Bowles and Shapiro have been the computation of mean indices from published figures for mean dimensions, and the estimation of differences in span and relative span in Shapiro's series by adding twice his figures for arm length to those for shoulder breadth in the appropriate way. This latter procedure is perhaps open to some criticism, but as it is used here it seems unlikely to yield illusory results. If A has longer arms and broader shoulders than B, it is quite safe to conclude that he has a greater span and, if their statures are identical, that he will show a higher value in the span: stature ratio. It is obvious that such estimates are not comparable with span and relative span derived from direct measurements, but no such comparison is here indulged.

Starting with the left-hand side of the figures, it is apparent that all the groups compared show increases in stature, and that all but one show increases in weight. That tall people tend to weigh more than short is self-evident, and the apparent exception in the case of the Hawaiian-born women is not a real one. These latter are young adults with an average age of 24.55 years, while the Japanese-born with whom they are compared are 14.05 years older. The Sedentes are distinctly middle-aged women, they doubtless carry the burden of extra fat which goes with their years, and though they are shorter they are also slightly heavier than the much younger Hawaiian-born. It is likely that this pronounced age factor accounts for other anomalies shown by the comparison of Hawaiian-born with Sedentes women, and it is unfortunate that we do not have means for those of the latter who were aged from 20 to 29. Shapiro found, however, that he had measurements of only 28 Sedentes women in that age class, and he decided that the sample was too small for serious consideration.

In the "Index of Body Fullness"—the ratio of weight to the cube of stature—the seven comparisons show no consistent or significant changes. Magnitude of the differences is only from one to five hundredths of an index unit save in the case of Hawaiian-born women where, as pointed out, it is due to a pronounced age factor in weight.

Arm length increases in all the series under observation, as is shown by the much greater increases in span than in shoulder width, and a breakdown of the figures suggests that there may be a very slightly greater proportionate elongation of arms than of stature save in the case of the Hawaiian-born women. The discrepancy in this case is almost surely not due to the age factor, but it is not feasible to assign great significance to any of Shapiro's figures on arm length because of the technique employed in making the measurements. Shapiro prescribed that length of arm should be appraised by measuring height of the shoulder above the floor, and then subtracting from this figure the measured height of the finger tip above the floor. Todd and Lindala[15] have pointed out that these measurements "are so hopelessly inaccurate that they should be wiped from the slate of the anthropometrist." But even if we regard as fortuitous the agreement shown by three of Shapiro's serial comparisons with those of Bowles and the Thailand Survey, it remains open to no doubt that arm length, a linear body length, increases with stature. The plausibility of regarding an increase in relative arm length as concomitant with the body changes under discussion is inferentially reinforced by the figures bearing on leg length.

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[14] In accordance with customary anthropometric usage, the term "relative" applied to a dimension indicates that the dimension is there considered as a percentage of stature. "Relative span" is span expressed as a percentage of stature; "relative sitting height" is sitting height expressed as a percentage of stature, etc. Thus, a high value in relative span indicates that an individual has arms which are long with respect to his height, while a low value indicates that arms are short with respect to height.

[15] Todd and Lindala, 1928, p. 58.

Sitting height, which is height of the body above the perineum, increases in all of the series save the Immigrant women, and the slight decline in that case is without statistical significance. Relative to stature, however, sitting height shows a decrease in all the comparisons save the college women (where, again, the exception is probably not statistically significant), and the corollary of this finding is that leg length—stature minus sitting height—increases relative to total body length. It seems to me that we may quite safely regard a slight increase in relative length of arms and legs as a part of the general pattern of change in body form.

In all of the seven comparisons shoulder width increases more than hip width, and there are consequent declines in the shoulder-hip ratio. In all of the male series shoulder breadth increases proportionately more than stature, while the hip breadth increases proportionately less. In consequence, the shoulder-hip indices show sharp and conspicuous declines. Two of the female comparisons agree in the behavior of the shoulder-hip ratio, but at this stage in the analysis it behooves us to walk warily. For the *agreement* shown by the Hawaiian-born women may in this case be spurious, and Bowles's figures for college daughters are based on a sample of only 29 individuals.

The middle-aged Sedentes women with their extra weight may well have yielded hip breadths —always difficult to measure in middle-aged women—too high for fair comparability with the figures from the younger and slighter Hawaiian-born, but perfectly suitable for comparison with the Immigrants from whom they differ scarcely at all in average age. In a very careful experiment it has been shown that the injection of three gallons of embalming fluid will raise biiliac breadth by half a centimeter in female cadavers, even when these are measured with dissecting room precision.[16] There is, therefore, no way of being sure that Hawaiian-born Japanese women actually have narrower hips than their Japan-born kin of the same age. Finally, due probably to the difficulty of measuring hip breadth in women, Bowles found that only 29 of his "College Daughters" had been measured in this trait and it is possible, though I think unlikely, that the extreme drops in hip breadth, relative hip breadth, and the shoulder-hip index which they show in the graph are wholly illusory. Thus, though I believe that the pattern of change in the hip proportions of women is entirely similar to that which is well documented for men, it is necessary to state that the diagramed data do not afford completely reliable confirmation. The conclusions of Greulich and Thoms, to be discussed on a following page, are better admissible as evidence, and they confirm, in general, the hypothesis that there exists an evolutionary trend toward relatively narrower hips in women.

Information on chest depth, and therefore on the thoracic index, is not available from our female series, due to the difficulty of measuring chest depth in women. The male series accord well in showing a sharp decline in the thoracic index, indicating a trend toward relatively shallower and "flatter" chests.

THE PATTERN OF EVOLUTIONARY CHANGE

To sum up the preceding section, I am inclined to believe that the data of Bowles, Shapiro, and the Thailand Survey reveal a pattern of change in body form which is essentially one and the same in New Englanders, Japanese, and Siamese who have experienced changes in environment. The pattern consists of generally increased body size —greater stature and proportionately greater weight—with slightly more than proportionate lengthening of the arms and legs, relatively broader shoulders and chest, relatively narrower hips, and relatively shallower chests.

What is the meaning of these changes? And what is the justification for regarding them as "evolutionary" and not simply a fuller achievement of maximum normal growth potentialities? We must search for the answers to these questions in the available data on (1) growth, and (2) correlations between stature and body proportions in populations which are presumed to be both racially and environmentally homogeneous.

Growth in stature continues in different populations and different individuals to different ages. In most, its continuation after the age of sexual maturity is not great but is quite sufficient, taken by itself, to justify an interpretation of the present data as evidence that environmental agencies may merely prolong and extend the period of growth. In the post-adolescent period, however, growth does not apparently involve changes in the body proportions similar to those here observed. Relative length of arms changes little if at all; relative length of legs decreases slightly; relative breadth of shoulders increases somewhat; and relative breadth of hips still more. The consequent increases in relative sitting height and the shoulder-hip index are contrary to the changes which are here being examined. It does not, therefore, appear feasible to interpret the hypothecated pattern of change in body build as a simple extension of normal post-adolescent growth. It is self-evident that evolutionary changes in body build cannot become manifest in adults without having been expressed earlier in the lives of the same adults as deviations from normal growth curves, but it would be deceptive to hold that, for this reason, changes in the adults were not truly evolutionary.

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[16] Todd and Lindala, 1928.

In every population adult individuals differ in stature, and the body proportions of tall persons differ from those of short. But they do not differ in the way that our tall series differ from the short. Both among the Central Thai and the West Lao, and in several large series of German students of both sexes,[17] we find that the taller individuals differ from the shorter in having a lower index of body fullness, relatively longer legs, relatively shorter arms, relatively narrower shoulders, hips and chests, higher shoulder-hip indices, and lower or unchanged thoracic indices. The sharp drop in the shoulder-hip index found among Central Thai, Japanese of Hawaii, and recent New Englanders is in itself diametrically opposed to any assumption that their increased stature has been accompanied only by such changes in the body proportions as normally differentiate tall from short individuals in a given population. Further contra-indications may be seen in the indices of body fullness and of relative chest dimensions. The Siamese, Japanese of Hawaii, and New Englanders have not become more attenuated as they have grown taller, although the popular observation that tall persons of a given population are "leaner" and "lankier" on the average than short is confirmed by every anthropometric study of the subject.

The change toward more "masculine" proportions is of particular interest in that it has long been held that broad hips are essential for the easy birth of large-headed offspring and that, consequently, great breadth of hips is a mark of high human evolution. It has been stated that Central European women are broader of beam than are women of "primitive" racial stocks, and it has been held that this greater beam is accompanied by relatively broader pelvic inlets. The suggestion that there may be an evolutionary trend toward relatively narrower hips in both men and women is, therefore, somewhat startling. But it is not without confirmation from still other sources.

Greulich and Thoms[18] have recently published the results of an intensive X-ray examination of nearly 700 white women which led to the following iconoclastic conclusions: (1) "Only 31.9 per cent of the 686 adults of this series had the type of pelvis which, according to the anthropologic literature, is proper for white women."[19] (2) Judging by the frequency of operative intervention required at childbirth, the type of pelvis regarded as proper for white women is functionally less adequate than the pelvis which is relatively long in the antero-posterior dimension and relatively narrow in the transverse. (3) "The high incidence of long oval and of round pelves among the largest women . . . suggests the possibility that nutritive and other factors which make for the attainment of maximum normal growth tend to prevent that degree of anteroposterior flattening which has come to be regarded as characteristically feminine."[20] After commenting on the contradictory findings of earlier writers they conclude (4) that "it appears, therefore, that the shape of the pelvic inlet in both sexes has changed materially during the past half century,"[21] though they note the likelihood that the earlier findings were probably based, for the most part, on dissecting room material representative of the less well nourished elements of the population, and that measurements of dried pelves are in themselves open to considerable suspicion of error. Anthropometric measurements made by the joint authors on some 200 of their women led to the conclusion that a knowledge of the body dimensions of any given woman is almost useless as an aid to diagnosis of the shape of her pelvic inlet, but the figures which they publish confirm expectation in indicating an average tendency for

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[17] Reported by Jung, 1926; Bach, 1927, 1931; and Arnold, 1929.

[18] Greulich and Thoms, 1938, 1939a, 1939b.

[19] Greulich and Thoms, 1939a, p. 23.

[20] Greulich and Thoms, 1939a, p. 24.

[21] Greulich and Thoms, 1939b, p. 292.

Table IV

BODY LENGTHS OF 478 HARVARD SONS AND 399 HARVARD FATHERS

Mean Actual Lengths in cm.	Fathers	Sons	Increase
Head and Neck Height	32.12	32.40	0.28
Thorax Height	38.11	38.08	−0.03
Abdominal Height	16.62	18.00	1.38
Pelvic Height	4.10	3.66	−0.44
Thigh Length	36.34	38.34	2.00
Knee Height	46.66	47.02	0.36
Stature	173.95	177.50	3.55
Percentile Lengths			
Head and Neck Height	18.47	18.26	−0.21
Thorax Height	21.91	21.45	−0.46
Abdominal Height	9.55	10.14	0.59
Pelvic Height	2.36	2.06	−0.30
Thigh Length	20.89	21.60	0.71
Knee Height	26.82	26.49	−0.33
Stature	100.00	100.00	0.00

(The above figures are derived by addition and subtraction from those published by Bowles 1932, pp. 22–23. "Head and Neck Height" is stature minus suprasternal height. "Thorax Height" is suprasternal height minus navel height. "Abdominal Height" is navel height minus pubic height. "Pelvic Height" is pubic height minus the difference between stature and sitting height. "Thigh Length" is the difference between stature and sitting height minus knee height. "Knee Height" and "Stature" are taken direct from the quoted source.)

women with the more highly evolved long-oval pelves to have lower relative hip breadths and shoulder-hip indices than those with the broad pelvic inlets.

Greulich and Thoms thus present data which fall in line with the pattern of evolutionary change which is hypothecated by the present study, and they again suggest nutritional factors as stimuli which may be in part responsible for the change.

Still further light on the nature of this evolutionary trend toward narrower hips is derivable from the figures published by Bowles, for the data which he compiled from college medical officers included a number of measurements which are not usually made by professional anthropologists. In view of the strong probability that the college authorities modified their measuring techniques from time to time, and because certain measurements were made on larger samples than others, it is not possible to assign great accuracy to the resulting figures. They are, however, highly suggestive. The comparable measurements from the women's colleges agree rather closely with those obtained by quite different observers in the men's colleges, and I think it worth while to present with all appropriate diffidence an interpretation of the figures which appears to accord well with functional and mechanical probabilities.

In table IV are shown figures for the absolute and percentile lengths of different linear segments in the bodies of Harvard Sons and Fathers, and for the differences between them. It will be noted that stature in the sons is 3.55 centimeters greater than in the fathers, and that very nearly all of the increase has taken place in the length of the thigh and of the abdomen—from navel to pubis. The sons show a slight and probably insignificant decrease in the segment between navel and suprasternal notch, and a marked decrease in the height of pubis above the perineum. The apparent anomaly of this latter decrease *may*, indeed, be disregarded as a possible consequence of faulty measurement technique, but there is no a priori reason to reject it.

I suggest that a plausible explanation of the figures may be that the pelvis is tending to tilt further forward, carrying on an evolutionary trend which, as is well known, has in the past accompanied man's adaptation to the erect posture. If the pelvis is tilted further forward in the Harvard Sons than in their Fathers, then all the apparent anomalies of Bowles's figures disappear. Length of the femur is increasing sharply. Forward tilt of the pelvis is bringing the pubic symphisis more nearly into the horizontal plane of the ischial tuberosities, and is thus causing a decrease in the vertical projective distance between pubis and perineum. This same forward rotation of the pelvis is causing a pronounced increase in the vertical distance between navel and pubis. The same factor, in all probability, is bringing the sacrum more nearly into the horizontal and is thus bringing about increased curvature in the lumbar section of the spinal column and, very likely, in the thoracic and cervical sections. In the segments where curvature is most notably increased, growth in the spinal column is least able to achieve expression as increase in projective vertical height. Thus, as is seen in Bowles's figures, the height of the thorax between navel and suprasternal notch shows a slight decline, and height of the body above the suprasternal notch is only slightly increased.

The chief weakness in the above hypothesis is its dependence on the assumption that the navel is not likely to have climbed up the anterior body wall. Bowles suggested that such a migration of the navel might explain the anomalies in his figures, but it is not apparent that such a migration has any functional or mechanical explanation. It would be extraordinarily difficult to prove (or to disprove) that the umbilicus has changed its orientation on the anterior body wall, but it does appear likely that the site of the navel is of less functional importance to adults than the complex relationships between spinal column, pelvis, and legs. Negroes and Whites show neither sex nor racial differences in the orientation of the umbilicus on the torso,[22] and this finding supports the assumption that the navel is less likely to be involved in evolutionary trends than is the pubic symphisis.

Unexpectedly, while Bowles's figures for hip breadth show decreases in both males and females, and in both absolute and relative terms, they also show for hip girth an absolute increase in both sexes. Since hip girth is generally measured as a maximum, and nearer to the horizontal plane of the trochanters than to that of the iliac crests, it seems to me possible that the increase in hip girth proceeds from the same tilting process which has already been hypothecated. Such a process would bring the sacrum more nearly into the horizontal and might produce, in consequence, greater protrusion of the buttocks. Alternatively, the increase in hip girth might be explained by postulating an increase in bitrochanteric diameter resulting from a divergence of the ischia from the median plane. Such a divergence might well be concomitant with the convergence of the iliac crests which is attested by declines in relative hip breath. I know of no data which would offer a satisfactory test for either hypothesis.

ENVIRONMENTAL STIMULI

Discussion of the general pattern of change in body build has led away, temporarily, from the three studies which it has been my primary object to compare. It has been shown, I believe, that the three reveal trends of change in physique which, if they are not identical, are nonetheless so similar in essentials as to raise a strong probability that Siamese, New Englanders, and Japanese of Hawaii have responded in much the same way to factors which are thought to be environmental in nature. It remains to investigate the conclusions of the three studies with the object of determining whether or not any single environmental agency may plausibly be regarded as common to all three. If a common agent is found, then there will be some basis for hypothecating a specific stimulus as partly responsible, in all races of man, for the described pattern of physical change.

The conclusions of the Thailand Survey have already been presented. Although there is no precise evidence as to the nature and extent of environmental differences between the areas occupied by West Lao and Central Thai, it has been noted that the dietary habits of the two peoples do differ and that, pending the collection of better evidence, they may be postulated as a probably important element in the differentiation of physique. The Central Thai depend upon a variety of rice which is quite different from that which is the mainstay of the Lao, and their economic habits make available to them a greater abundance and variety of secondary foods. There is not, in my opinion, very good reason to suppose that the difference between glutinous and non-glutinous rice is so important a cause of physical differentiation as is the more abundant and more diversified dietary. Because they buy so large a proportion of their secondary foods, the Thai are able to consume them throughout the year. The Lao, on the other hand, must grow, catch, or collect the greater part of their subsidiary foods, and particular side-dishes are, therefore, available to them only during particular seasons of the year.

Bowles[23] concluded that the most probable causes of physical differentiation in New Englanders were, in order of their probable importance:

(1) Increased medical attention in preserving those children who have outgrown their strength until they have reached maturity and a normal state of resistance to disease.

(2) Cultural modernization and a general speeding up process.

(3) Better food in more abundance and greater variety.

(4) More exercise.

(5) Possible assortive and selective mating on the part of parents.

(6) Occupational change of parents.

(7) The non-ascertainable element of climatological and meteorological effect.

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[22] Todd and Lindala, 1928, pp. 54–56.

[23] Bowles, 1932, p. 142.

Only the dietary element, numbered (3) in Bowles's category, appears plausibly applicable to the Siamese milieu. I am prepared to assert, on the basis of considerable first hand knowledge, that there do not exist between West Lao and Central Thai areas any appreciable differences in the quality or quantity of medical facilities available to the rural population. The Central Thai do not take more exercise than the West Lao; they do not follow different occupations; and they do not have different tastes or mores in matrimony. The Central Thai might be described as culturally more "modernized" than the Lao, if the phrase applied solely to economics, because they lead a more commercialized life; but I believe it is only in the nutritional consequences of this commercialization that a potent environmental agent may be seen. The phrase "a general speeding up process" resists precise definition, but I should say that the tempo of life is much the same in both Lao and Thai villages. "The non-ascertainable element of climatological and meterological effect" may not be rejected as a *possible* cause of differentiation in physique, but I believe it would be extraordinarily difficult to show that differences in climate and meteorology between West Lao and Central Thai areas are at all parallel to such changes as may have taken place in these factors in New England during the past half century. I conclude that the change in food habits of the New England population, resulting from commercialization and rapid communication, is roughly parallel to the difference in food habits between West Lao and Central Thai, and that it may be regarded as an environmental factor common to the two milieus.

Shapiro drew from his data only the broadest and most noncommittal of conclusions. He ascribed the differences between Immigrants and Sedentes to the operation of some unknown selective agent, and he concluded that the further changes observed in Hawaiian-born were due chiefly to the operation of unknown environmental factors.

Since the Immigrants had presumably entered Hawaii at an age when their physical growth was nearly complete, Shapiro held that their physique could not thereafter have been changed to any considerable extent by exposure to a new environment. Nonetheless, and in spite of the fact that Immigrants and Sedentes were closely related by blood, they did differ physically. There was no evidence of any economic or social factor which might have selected for migration specific physical types from within the Japanese families. Shapiro rejected the possibility that a psychological propensity for migration might have correlates in physique, for no such propensity could well be imputed to the women: though the men had presumably migrated of their own volition, the women had gone to Hawaii either because they were taken by their husbands or because they were sent out by their families as "picture brides." In spite of the fact that he could not put his finger on any selective agency which might have caused the differences, Shapiro finally concluded that some such agency must exist. He felt that selection was more likely to have been effective in differentiating Immigrants from Sedentes than any other factor.

The further changes in physique shown by Hawaiian-born were believed by Shapiro to be chiefly caused by environmental differences between Japan and Hawaii, but he provided no information and expressed no opinions as to the ways in which the two environments are most notably different. His only statement on the subject is couched in generously comprehensive terms: "Besides obvious changes in temperature, rainfall, humidity, soil conditions, food supply there are innumerable alterations in cultural and social conditions involving the regulation of health, labor, economics, and a multitude of other factors."[24]

If it be true that some selective process has differentiated the migrating elements of the Japanese population from the stay-at-homes, then it is remarkable that environmental factors have induced further differentiation in essentially the same traits and in essentially the same ways. One would rather expect to find that similar effects were brought about by similar causes—that selection, if it accounts for the differences shown by Immigrants, may account through inbreeding for the further differences shown by the offspring of Immigrants; or that environmental factors, if they cause modification in the physique of Hawaiian-born, may have led to similar but less extensive change in the physique of migrants to Hawaii. There are objections to both alternatives, however, and one understands Shapiro's reluctance to place any speculations on record. His study raises more problems than it solves.

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[24] Shapiro, 1939, p. 6.

For the purposes of the present paper, it need only be noted that the physical changes shown by Japanese-born in Hawaii are thought to have taken place in response to an environment which differs from that of Japan, and that "food supply" is one of the many ways in which the two environments differ. Nutrition thus enters the picture again, and it seems to me quite probable that the diet of Japanese in Hawaii may be more varied and more abundant than that of the stay-at-home Japanese. If this is so, then we may hold that a common denominator for the Thailand, New England, and Hawaii studies has been found, and it is feasible to hypothecate the pattern of change in body form as one which is stimulated by increased variety and quantity in nutrition.

It is scarcely to be doubted that general size of the body is partially dependent on diet, and that both the variety and quantity of the foods ingested are important. It seems reasonable to suppose that when a diet becomes more varied it is less likely to be deficient in any of the vitamins and other elements which are necessary in small quantities for the attainment of full growth.

The degree to which the other described changes depend upon diet is another matter. Some of the changes in proportions, and especially the suggested adaptation of the pelvis and spinal column to the erect posture, appear likely to represent evolutionary changes which must be presumed to take place almost without regard to diet. It seems to me probable, however, that these changes may progress with greater rapidity when marked increase in body size occurs. In large and heavy individuals the need for functional adaptation is very likely more urgent than in small, and it is not impossible that plasticity itself may be increased by a fuller diet.

Whether or not nutrition really plays an important part in the described changes in body build, it is clear that the changes themselves are taking place among Thai, New Englanders, and Japanese of Hawaii in remarkably similar fashion. The implication that similar stimuli may be responsible for these changes deserves investigation.

SUMMARY

Measurements of a large number of adult Siamese males have shown that the Lao-Thai people who live in the lower Menam Valley of Central Thailand differ from their close kin of North Thailand, the West Lao, in having significantly greater stature, proportionately greater weight, slightly more than proportionately longer arms and legs, relatively broader shoulders and chests, relatively narrower hips, and relatively shallower chests. All of the differences in dimensions and most of the differences in proportions are too great to be explained as likely to be due to the hazards of random sampling, and it is not feasible to interpret them as a consequence of race mixture between the Thai and any other people with whom such mixture appears historically possible. Malays living in the same area show almost identical differences from their kin of the Malay Peninsula, but the number of Malays measured is too small for the figures in most dimensions and proportions to have statistical significance.

It is suggested that the changes which have taken place in the body build of Central Thai appear most likely to have been in response to their use of a more varied diet than the Lao, and the existence of such a nutritional difference between the two peoples is attested by figures from two economic surveys of Siam which indicate that Central Thai households spend on the average twice or three times as much for foods which are not home-produced as do the Lao.

It is noted that Japanese who have been born in Hawaii differ in essentially the same way from their kin who are still resident in Japan, and that essentially the same differences have been found between New Englanders of the recent adult generation and their parents. The two authorities responsible for these findings have in each case suggested nutritional agencies among other environmental factors which may have been partially responsible for the observed changes in body build.

It is concluded that the similarities in the physical changes shown by the New England, Hawaiian, and Siamese investigations, and the postulation by all three studies of nutritional factors as possibly effective activating agents, justify the hypothecation of a broad pattern of change in body build which may be stimulated in all races of men alike by increased variety or other improvement in diet. The pattern consists of those changes which have been described above as differentiating Central Thai from West Lao in Siam. Justification for regarding the pattern as evolutionary is seen in the marked differences between it and the usual pattern of normal post-adolescent growth, and between it and the pattern

which ordinarily differentiates tall from short individuals in a racially homogeneous population.

Evidence from the New England study, and from a recent intensive X-ray examination of nearly 700 white women, lead to the suggestion that an increased downward tilting of the pelvic brim, increased antero-posterior curvature of the backbone, and a trend toward the form of pelvic inlet which has long been regarded as "primitive" may be concomitant with the other changes described.

Appendix Table A

MEAN HEAD AND FACE DIMENSIONS AND PROPORTIONS OF 817 WEST LAO AND 952 CENTRAL THAI

	West Lao	Central Thai
Head Girth	532.70 ± 0.34	537.80 ± 0.31
Cephalic Module	150.76 ± 0.10	152.44 ± 0.09
Head Length	175.62 ± 0.14	178.53 ± 0.13
Head Height	124.78 ± 0.13	125.90 ± 0.12
Head Breadth	151.84 ± 0.12	152.83 ± 0.11
Min. Frontal Breadth	98.54 ± 0.11	100.18 ± 0.10
Bizygomatic Breadth	137.35 ± 0.12	139.60 ± 0.11
Bigonial Breadth	103.66 ± 0.14	107.58 ± 0.13
Morph. Face Height	116.95 ± 0.47*	120.10 ± 0.15*
Upper Face Height	69.60 ± 0.37*	71.05 ± 0.11*
Nose Height	52.54 ± 0.30*	52.14 ± 0.08*
Nose Breadth	38.48 ± 0.06	39.80 ± 0.06
Cephalic Index	86.49 ± 0.09	85.65 ± 0.08
Length-Height Index	71.03 ± 0.08	70.49 ± 0.07
Mean Height Index	76.12 ± 0.07	76.03 ± 0.07
Breadth-Height Index	82.22 ± 0.08	82.46 ± 0.08
Morph. Facial Index	84.78 ± 0.39*	86.07 ± 0.12*
Upper Facial Index	50.84 ± 0.26*	50.90 ± 0.08*
Nasal Index	75.30 ± 0.47*	76.38 ± 0.16*
Fronto-Parietal Index	65.02 ± 0.07	65.59 ± 0.07
Cephalo-Facial Index	90.50 ± 0.07	91.43 ± 0.06
Zygo-Frontal Index	71.82 ± 0.07	71.78 ± 0.07
Fronto-Gonial Index	105.19 ± 0.16	107.59 ± 0.15
Zygo-Gonial Index	75.52 ± 0.09	75.82 ± 0.21

* Difficulties encountered in locating nasion during the early part of the Thailand Survey work have led me to reject the records then collected for measurements and indices which depend on its correct identification. Those which have been retained and are reported upon are, I believe, correct; but they are based on smaller samples than the other data. N for the West Lao is only 85, and for the Central Thai is 821.

Appendix Table B

MORPHOLOGICAL OBSERVATIONS OF 818 WEST LAO AND 953 CENTRAL THAI

	West Lao	Central Thai
Exposed Skin Color: Per cent equal to or darker than #18 on Von Luschan scale, (dorsum of upper arm)	71.61	83.69
Unexposed Skin Color: Per cent equal to or darker than #18 on Von Luschan scale, (volar surface of upper arm)	4.53	15.82
Eye Color: Per cent "Pure Black"	0.24	—
"Almost Black"	41.08	48.21
"Dark Brown"	53.67	46.73
Sclera Color: Per cent with perceptible yellowish or brownish pigment	63.37	78.45
Hair Color: Per cent "Pure Black"	19.49	9.76
"Almost Black"	80.02	89.93
Hair Form: Per cent with "Medium Waves," "Deep Waves" or "Curly"	4.64	10.69
Mustache: Per cent with mustaches equal to or greater than European in quantity	2.20	4.67
Body Hair: Per cent with body hair equal to or greater than European in quantity	1.23	4.14
Forehead Slope: Per cent with moderate or pronounced slope	16.73	44.52
Brow-ridges: Per cent with moderate or pronounced supra-orbital ridges	19.80	52.34
Alveolar Prognathism: Per cent with moderate or pronounced alveolar prognathism	55.46	17.37
Nasal Root Height: Per cent with "Very Low"	17.34	1.26
Nasal Bridge Height: Per cent "Very Low"	11.23	0.84
Nasal Profile: Per cent "Concave"	20.05	10.54
Eyefolds: Per cent without any trace of epicanthic eyefolds	12.47	21.29
Per cent with moderate or pronounced epicanthic eyefolds	24.82	10.49

(All observations were made subjectively by visual appraisal, and all were made by myself.)

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XI

PHYSICAL TYPES AMONG THE JAPANESE

Frederick S. Hulse

ONE of the oldest ways used by man in attempting to trace the ancestry and place of origin of a people is to study its history and traditions. Were we to apply this method uncritically to the Japanese, it would lead us to the astonishing conclusion that they were left out of the evolutionary scheme. The earliest histories and the oldest traditions of the Japanese agree in maintaining that the Japanese are descendants of the gods, and that their forebears came directly from the High Plain of Heaven to Japan itself. It is obvious even to the ordinary observer, however, that the inhabitants of Japan bear some sort of genetic relationship to the other Oriental peoples. It is our task to discover what sort of a relationship this may be.

It is known that cultural influences from the south, shown by such traits as the house type, are older in Japan than the influences which have come, largly by way of Korea, from the centers of Chinese civilization. Both archaeology and history show clearly that the Ainu, as recently as thirteen centuries ago, extended throughout at least the northeastern third of Hondo, the largest island of the Japanese group. The Japanese themselves then lived in the southwestern two-thirds of Hondo and in the more southerly islands, Kyushu and Shikoku. It was during this period that Chinese civilization was officially adopted by the Empire, although contact with Korea was by then already old. It is known that some Chinese and Koreans came to Japan to settle and interbreed with the inhabitants, and that many have continued to do so in more recent times, but it may not be inferred that the extent of the interbreeding was comparable to the extent of the cultural transfusion. The Ainu, too, although they certainly once occupied land which is now inhabited by some fifteen millions of Japanese, did not necessarily intermingle with the latter to any great degree: the Japanese regard the Ainu much as European settlers in North America regarded the Indians.

The available historical and ethnological data, then, can tell us practically nothing about the racial background of the Japanese. Only a study of physical types, both ancient and modern, among this people, together with comparisons between them and the types found among nearby peoples, will be able to provide the information we desire. Regrettably, we have at the present time all too little data, not only for Japan but also for China, Korea, Manchuria, and the Malay regions.

Skeletal material from archaeological sites, which ought to be considered first, is not yet very abundant, but enough has been examined to make it clear that several physical types existed in prehistoric and proto-historic Japan. These have been quite variously and rather confusingly classified by the students, both Japanese and Occidental, who have dealt with them. Dixon[1] postulates Proto-Negroid, Proto-Australoid, Palae-Alpine, and Caspian cranial types. Matsumoto[2] describes three types inhabiting Japan during the neolithic period. His Aoshima type may be synchronized with Dixon's Proto-Australoid and Proto-Negroid, his Miyato Dwarf with Dixon's Palae-Alpine, and his Tsukumo Tall with Dixon's Caspian. These types are thought to have been present in Japan, or to have influenced the racial picture in Japan during the neolithic period, for no human remains older than that period have yet been found.

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[1] Dixon, 1923, p. 288.

Dixon classified all human crania according to their cephalic, length-height and nasal indices. He defined the eight possible combinations of these proportions as follows:

Caspian: Long-headed, high-headed, and narrow-nosed.

Mediterranean: Long-headed, low-headed, and narrow-nosed.

Proto-Negroid: Long-headed, high-headed, and broad-nosed.

Proto-Australoid: Long-headed, low-headed, and broad-nosed.

Alpine: Broad-headed, high-headed, and narrow-nosed.

Ural: Broad-headed, low-headed, and narrow-nosed.

Palae-Alpine: Broad-headed, high-headed, and broad-nosed.

Mongoloid: Broad-headed, low-headed, and broad-nosed.

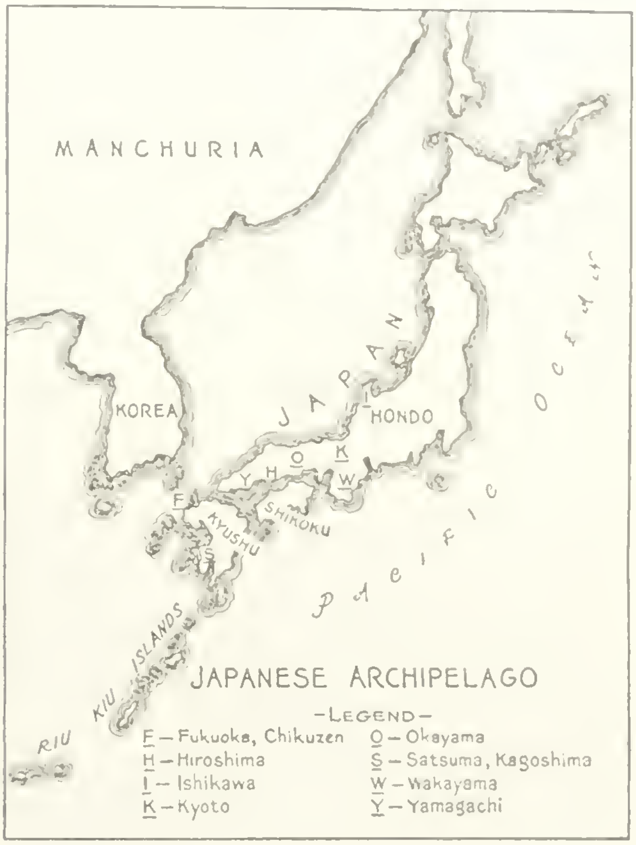
See Dixon, 1923, pp. 3–23. Ed.

[2] Matsumoto, 1921, pp. 70–73.

Matsumoto's Aoshima type[3] corresponds to the more northerly and predominant group of Ainu, as it has medium short stature and is dolicho- or mesocephalic and prognathous. The Miyato Dwarfs are said to be very short, brachy- or meso-cephalic, and orthognathous, and to correspond to the more southerly and less numerous type of Ainu. Both are short-faced. The Tsukumo Tall type, taller, meso- or brachycephalic, orthognathous, and short-faced, seems to have entered Japan at a later date than the first two and to have spread throughout the country at the expense of their precursors. The Japanese students consider that all three types are more Caucasoid than Mongoloid in appearance and are, indeed, likened to Neolithic Europeans. Matsumoto goes so far as to say that both the Miyato and Tsukumo types are closer to the European than is the Ainu of today.

A fourth type, the Okayama, appeared in Japan just before or early in the iron age and it has persisted till the present time. Brachycephalic, long-faced, and less tall than the Tsukumo, the Okayama type is recognizably Mongoloid, and it is possible that it represents the population which brought to the islands a culture which was Japanese and in contrast to the pre-Japanese culture. Its racial affiliations are often considered to be with the northern rather than with the southern Mongoloids. Hasebe[4] links it in particular to the Korean. Yet the culture of proto-historic Japan is closer to southeastern Asia than to Korea. At any rate, the Okayama is but one of four modern types in Japan, according to Matsumura and Hasebe. The other three are the Ishikawa, the Chikuzen, and the Satsuma. The Ishikawa type is short and mesocephalic, the Chikuzen rather taller and mesocephalic, and the Satsuma short and brachycephalic. All three have short faces. Matsumoto believes that the Ishikawa type is a Mongolized Miyato Dwarf, and Chikuzen a Mongolized Tsukumo.

The centers of distribution for these three types are said to be—Okayama, central Japan and the shores of the Inland Sea; Ishikawa, northeastern Japan; Chikuzen, northern Kyushu; and Satsuma, Shikoku and southern Kyushu. A glance at the map (map 7) shows that the brachycephalic types are not concentrated near China or Korea, but rather extend up from the Riu-Kiu Islands south and east of the mesocephals. This suggests that either (1) the round-headed peoples came from the southwest rather than from Korea, or (2) they were succeeded in the areas nearest China and Korea by a still later group of long-headed immigrants. For the second alternative we have no evidence whatsoever.



Map 7. Japanese Archipelago, area studied.

Baelz, Buxton, and other European authorities distinguish a "fine" and a "coarse" type among the Japanese; the former dolichocephalic, leptorrhine, and long-faced; the latter brachycephalic, platyrrhine and round-faced.[5] Although one does see both sorts in Japan, neither, in all probability, comprises more than a tiny fraction of the population, and no sort of geographical distribution is assigned to either. Indeed, the most evident fact concerning the Japanese people of today is that, however diverse their origin, they tend to share most of the features which distinguish the Mongoloid branch of mankind. Almost all Japanese have dark eyes, very dark hair, ivory to tan skin

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[3] The views ascribed to Matsumoto in this and the following paragraphs are those expressed in his 1921 article.

[4] Buxton, 1925, p. 215.

[5] Buxton, 1925, p. 216.

Table I

		Range	Mean	S.D.	V.
Stature	Matsumura	148–176 cm.	162.12 ± .33	4.92 ± .23	3.03 ± .14
	Hulse	148–172 cm.	159.04 ± .80	5.89 ± .56	3.66 ± .34
Head Length	Matsumura	175–202 mm.	187.93 ± .37	5.55 ± .26	2.95 ± .14
	Hulse	179–208 mm.	193.32 ± 1.01	7.44 ± .71	3.84 ± .37
Head Breadth	Matsumura	139–168 mm.	153.46 ± .34	5.08 ± .24	3.31 ± .16
	Hulse	142–164 mm.	154.52 ± .85	6.29 ± .60	4.18 ± .39
Cephalic Index	Matsumura	74– 91	81.76 ± .23	3.44 ± .16	4.21 ± .20
	Hulse	73– 85	80.12 ± .40	2.97 ± .29	3.46 ± .36

color, and features moulded more smoothly, with fewer projections and hollows, than is common among the European, African, or Australian racial types. A large majority of Japanese have at least a trace of eyefold, hair which is abundant, coarse and straight on the head, but very scanty on the face and body, relatively short legs and well-developed chests and shoulders.

Recently a few studies have been made of the physical anthropology of living Japanese which are wider in scope, or more thorough, than were the older ones. From these one may gain much more information regarding the actual relationship of this people to the other Oriental groups. Matsumura's classic work on the stature and cephalic index of the Japanese is the first of these. Considerable differences are shown to exist between various sections of the country in these characteristics. About Kyoto, for instance, the subjects were found to be tall, with heads very short and of average breadth; near Kagoshima they were short, with very broad heads of average length; about Fukuoka, they were of medium stature, with heads longer and narrower than usual; along the Japan Sea Coast north of Kyoto they were short, with long, narrow heads.[6] These four localities roughly correspond to the centers of distribution of the four types of Hasebe and Matsumura mentioned above. It is interesting to note that the shorter people tend to have the longer heads, the taller to have shorter heads.

In Japan, however, really pronounced brachycephaly is rare, 65 per cent of Matsumura's subjects having an index below 82, and less than 6 per cent of 87 or above. The bulk of the population lies on the borderline of meso- and brachycephaly, being thus less round-headed than the typical Mongoloid. There would appear to be, therefore, a rather considerable non-Mongoloid element remaining among the present day inhabitants of Japan, an element long-headed and short in stature. There is considerable evidence that such a short dolichocephalic group was once widespread along the Pacific Coast of Asia. The Ainu to the north and the Indonesians to the south of the Japanese, probably incorporate such a type. Its presence, therefore, among the modern Japanese need not surprise us.

The shores of the Inland Sea, from Wakayama to Yamaguchi, have long been densely populated and have supplied the greater number of Japanese emigrants to foreign countries. Rather thorough examinations of large numbers of these migrants, their descendents in Hawaii and California, and their kin who still remain in Japan have been made by Shapiro and the author. This region is the home of the Okayama type, said to be taller and more brachycephalic than the average Japanese. The prefectures of Yamaguchi and Hiroshima at the western end of the sea, and of Wakayama at the eastern end, provide us with series large enough for individual treatment.

The group from the prefecture of Wakayama, anciently the province of Kii, may be used as an illustration. Twenty-five natives of this province who migrated to California in adult years have been examined. A large majority of them are fishermen. Matsumura measured one hundred and one students of the same province in higher schools there. Table I gives the comparable figures from the two groups.

The usually greater variability and the higher probable errors in the author's series are of course due to the small size of the group. The difference between the two groups in stature is approximately that which is known to exist between stu-

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[6] Matsumura, 1925, pls. I, III and VII.

Table II

MEASUREMENTS AND INDICES IN WHICH 25 JAPANESE MALES OF WAKAYAMA PREFECTURE DIFFER FROM 41 OF YAMAGUCHI AND HIROSHIMA

		Range	Mean	S.D.	V.
Head height	Wakayama	106–144	125.68 ± 1.21	9.47 ± .90	7.53 ± .71
	Other Japanese	109–148	131.02 ± 1.08	10.20 ± .76	7.76 ± .58
Minimum Frontal	Wakayama	96–125	106.76 ± .84	6.27 ± .59	5.87 ± .55
	Other Japanese	98–120	108.03 ± .58	5.52 ± .42	5.11 ± .38
Total Face Height	Wakayama	112–141	121.12 ± .88	6.50 ± .62	5.41 ± .51
	Other Japanese	108–137	120.49 ± .65	6.19 ± .46	5.16 ± .38
Nose Width	Wakayama	33– 46	38.16 ± .38	2.84 ± .27	7.43 ± .71
	Other Japanese	33– 43	37.10 ± .29	2.69 ± .20	7.25 ± .54
Length-Height Index	Wakayama	56– 75	65.52 ± .69	5.16 ± .49	7.88 ± .75
	Other Japanese	53– 82	68.78 ± .68	6.48 ± .48	9.32 ± .70
Zygo-Frontal Index	Wakayama	68– 81	73.92 ± .47	3.45 ± .33	4.67 ± .45
	Other Japanese	68– 81	75.59 ± .45	3.24 ± .31	4.31 ± .41
Fronto-Gonial Index	Wakayama	86–104	95.00 ± .59	4.33 ± .41	4.56 ± .43
	Other Japanese	89–110	97.85 ± .61	5.75 ± .43	5.87 ± .44
Nasal Index	Wakayama	62– 88	72.08 ± 1.06	7.83 ± .74	10.86 ± 1.03
	Other Japanese	52– 85	69.12 ± .74	6.98 ± .58	10.10 ± .84

dents and the individuals of the poorer classes; and the difference in head breadth is not great enough to be significant. More interesting is the great head length of the fisherman. Again we see that the shorter group has a longer mean head length. Also it is important to notice that the smaller series has a much less variable, as well as lower, cephalic index.

Further measurements, indices, and observations made by the author on the Wakayama group cannot be compared with work by other students, for none has been published. Some of the characteristics in which the Wakayama series differs most from Japanese of other provinces are presented in tables II and III. Although none of the measurements or indices shows a really significant difference, the features which seem to differentiate this group from the other Japanese include a number worthy of special attention. The iris is very frequently mixed in color rather than dark brown or black. The development of external, as contrasted to internal eyefolds, is remarkable in a series from Japan. Perhaps it may be explained by the fisherman's life at sea, where the glare of reflected sunlight might cause the development of a protective squint, particularly among individuals with light, rather than dark, eyes. Furthermore, the foreheads of the Wakayama group tend to be narrower. Their noses are broader and less convex, but the Japanese nose is extremely variable in all measurements and indices. The chins of Wakayama Japanese are more receding than those of Japanese from other prefectures studied. Their head height may also be less, but is both bimodal and extremely variable; and one cannot attach too much significance to it because it was measured indirectly and calculated by projection, a head-spanner being unavailable at the time the measurements were made.

Although the Wakayama series is much too small to be subdivided into different types, it is noticeable that an association exists between mixed eyes, external eyefolds, dolichocephaly, narrow noses and hair of medium, rather than coarse, texture. This is suggestive, even though not statistically significant.

The complete Japanese group may be divided in a number of ways, aside from the purely geographical one. If we select 160 mm. as the dividing line between tall and short individuals, and 79 as the dividing line between those who are round-headed and those who are long-headed, we find 23 members of the Satsuma type, 21 of the Okayama, 16 of the Ishikawa and 6 of the Chikuzen. Tall

TABLE III

MORPHOLOGICAL CHARACTERS IN WHICH 25 JAPANESE MALES OF WAKAYAMA PREFECTURE DIFFER FROM 41 OF YAMAGUCHI AND HIROSHIMA

		Coarse	Medium	Fine	
Hair Texture	Wakayama	16	8	1	
	Other Japanese	24	16	1	
Hair Quantity					
		Very Scanty	Scanty	Medium	
Moustache	Wakayama	3	16	6	
	Other Japanese	9	22	10	
Chin	Wakayama	8	11	6	
	Other Japanese	16	16	9	
		Dark	Mixed		
Eye Color	Wakayama	16	9		
	Other Japanese	36	5		
		Absent	Internal	Median	External
Eyefold	Wakayama	7	14	16	15
	Other Japanese	6	26	25	26
		Depressed	Low	Medium	High
Nasal Root Height	Wakayama	6	13	6	0
	Other Japanese	9	23	7	2
		Low	Medium	High	
Nasal Bridge Height	Wakayama	4	19	2	
	Other Japanese	3	38	0	
		Concave	Straight	Convex	Conc-Conv & Wavy
Nose Shape	Wakayama	2	16	4	3
	Other Japanese	3	15	15	8
		Prominent	Medium	Receding	
Chin	Wakayama	0	8	17	
	Other Japanese	2	19	20	

dolichocephals are the rarest of all in the present series, and short brachycephals the most common.

On the other hand, one may follow Dixon and divide the Japanese into cranial types on the basis of cephalic index, length-height index, and nasal index. Let us select 63 as the dividing line between chamaecephalic and hypsicephalic individuals, and 70 as the dividing line for the nasal index. All of Dixon's groups are then represented, but in most uneven proportions. There are 21 Alpines,[7] 16 Palae-Alpines, 8 Proto-Negroids, 6 Proto-Australoids, 5 each of Urals and Caspians, 3 Mediterraneans, and 2 Mongoloids. However, all groups, whether of Dixon, Matsumura, or Hasebe, appear to be Mongoloid, in the broad sense of the term, in their sum total of measured and observed characteristics. A few individuals, of course, are distinctly aberrant, such as one Proto-Australoid of the Ishikawa group with very wavy hair, very dark pigmentation, and marked brow-ridges.

The breadth of the forehead is often a significant racial feature, and in the seriation of the complete Japanese group there was found a sharp bimodality in this characteristic. One peak of the series in minimum frontal diameters is found at 106 mm., the other at 113 mm., with a sharp dip between these two points. Twenty-seven, with a forehead breadth of 109 mm. or more, are classed as "broad foreheads," the other thirty-nine are classed as "narrow foreheads." There are quite a few striking differences between the two groups. Some of these differences, to be sure, must be taken for granted, such as the generally greater size of the facial breadth measurements among the "broad forehead" individuals. A number of measurements, indices, and observations which show

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[7] See footnote 1 for definitions of these racial types as classified by Dixon. Ed.

TABLE IV

MEASUREMENTS IN WHICH 27 ADULT JAPANESE WITH BROAD FOREHEADS DIFFER FROM 39 JAPANESE WITH NARROW FOREHEADS

		Range	Mean	S.D.	V.
Stature	Broad Forehead 27	148–172	162.00 ± .80	6.14 ± .57	3.79 ± .35
	Narrow Forehead 39	144–168	157.38 ± .64	5.89 ± .45	3.74 ± .29
	Total 66	144–172	159.23 ± .52	6.26 ± .38	3.93 ± .24
Head Length	Broad Forehead	182–208	193.89 ± .92	7.05 ± .65	3.63 ± .34
	Narrow Forehead	176–206	190.46 ± .78	7.11 ± .61	3.73 ± .32
	Total	176–208	191.59 ± .57	6.80 ± .40	3.55 ± .21
Head Breadth	Broad Forehead	146–164	157.33 ± .55	4.24 ± .39	2.69 ± .25
	Narrow Forehead	142–164	150.85 ± .58	5.33 ± .40	3.54 ± .28
	Total	152–164	153.50 ± .50	5.94 ± .28	3.87 ± .18
Head Height	Broad Forehead	115–147	132.22 ± 1.27	9.87 ± .90	7.48 ± .68
	Narrow Forehead	105–145	127.08 ± 1.12	10.32 ± .79	8.11 ± .63
	Total	105–147	129.09 ± .84	10.20 ± .61	7.90 ± .47
Minimum Frontal Breadth	Broad Forehead	109–126	113.22 ± .46	3.56 ± .33	3.16 ± .29
	Narrow Forehead	94–108	103.89 ± .36	3.36 ± .25	3.23 ± .24
	Total	94–126	107.73 ± .49	5.77 ± .34	5.36 ± .31
Bizygomatic Breadth	Broad Forehead	136–160	147.67 ± .80	6.11 ± .56	4.14 ± .38
	Narrow Forehead	132–148	140.47 ± .64	4.92 ± .45	3.50 ± .32
	Total	132–160	143.68 ± .51	6.10 ± .36	4.24 ± .25
Bigonial Breadth	Broad Forehead	104–130	114.78 ± .80	6.13 ± .56	5.34 ± .49
	Narrow Forehead	100–120	109.77 ± .49	4.56 ± .34	4.10 ± .31
	Total	100–130	111.68 ± .49	5.85 ± .35	5.26 ± .31
Nose Height	Broad Forehead	47– 65	54.30 ± .56	4.29 ± .40	7.90 ± .73
	Narrow Forehead	44– 60	53.10 ± .40	3.69 ± .28	6.95 ± .52
	Total	44– 65	53.59 ± .32	3.74 ± .21	6.98 ± .39
Nose Length	Broad Forehead	45– 66	53.19 ± .59	4.58 ± .42	8.62 ± .80
	Narrow Forehead	40– 60	51.54 ± .43	3.95 ± .30	7.67 ± .58
	Total	40– 66	52.09 ± .36	4.28 ± .26	8.21 ± .49
Nose Breadth	Broad Forehead	33– 42	37.19 ± .32	2.46 ± .23	6.61 ± .62
	Narrow Forehead	33– 46	37.72 ± .32	2.97 ± .23	7.88 ± .61
	Total	33– 46	37.50 ± .24	2.81 ± .17	7.53 ± .45
Nose Salient	Broad Forehead	9– 18	13.74 ± .30	2.24 ± .21	16.36 ± 1.54
	Narrow Forehead	11– 20	14.44 ± .25	2.21 ± .17	15.25 ± 1.18
	Total	9– 20	14.15 ± .19	2.32 ± .14	16.39 ± .99

variation as between the "broad forehead" and "narrow forehead" types are presented in tables IV, V, and VI.

Not only are the individuals with broad foreheads generally larger, but it can be seen that their noses are quite different in shape from those of the "narrow forehead" type—longer, narrower, and less protruding. Indices and observations of the nose bring out this deviation even more clearly than do the measurements alone. This combination of peculiarities in the region of the nose and forehead gives a characteristic appearance to the "broad forehead" type which is quite different from that of other Japanese. Also, the various facial indices demonstrate the deviation from normal of the "broad forehead" type. The breadth of the jaw is correlated much more closely with that of the zygomatic arches than it is with minimum frontal diameter. Therefore, the face appears definitely round, while that of the "narrow forehead" group is more nearly pentagonal, narrow above and broad below.

Table V

INDICES IN WHICH 27 ADULT JAPANESE WITH BROAD FOREHEADS DIFFER FROM 39 JAPANESE WITH NARROW FOREHEADS

		Range	Mean	S.D.	V.
Length-Height Index	Broad Forehead	56– 82	68.78 ± .80	6.08 ± .56	8.86 ± .81
	Narrow Forehead	53– 80	66.69 ± .71	6.58 ± .50	9.86 ± .74
	Total	53– 82	67.55 ± .53	6.40 ± .38	9.44 ± .56
Total Facial Index	Broad Forehead	73– 91	82.00 ± .53	4.13 ± .38	5.04 ± .47
	Narrow Forehead	80– 96	85.67 ± .48	4.43 ± .34	5.17 ± .40
	Total	73– 96	84.23 ± .40	4.80 ± .28	5.74 ± .33
Fronto-Parietal Index	Broad Forehead	67– 80	71.67 ± .42	3.26 ± .30	4.55 ± .42
	Narrow Forehead	63– 73	68.69 ± .34	3.15 ± .24	4.59 ± .35
	Total	63– 80	69.91 ± .27	3.26 ± .19	4.66 ± .27
Fronto-Gonial Index	Broad Forehead	92–110	99.11 ± .72	5.58 ± .52	5.63 ± .52
	Narrow Forehead	85–104	95.15 ± .51	4.74 ± .36	4.99 ± .38
	Total	85–110	96.77 ± .46	5.56 ± .32	5.74 ± .33
Zygo-Frontal Index	Broad Forehead	71– 82	76.22 ± .47	3.65 ± .34	4.80 ± .45
	Narrow Forehead	69– 81	74.08 ± .36	3.27 ± .25	4.42 ± .34
	Total	69– 82	74.95 ± .28	3.33 ± .20	4.45 ± .27
Nasal Index	Broad Forehead	52– 76	68.67 ± .84	6.42 ± .60	9.40 ± .88
	Narrow Forehead	56– 88	71.38 ± .84	7.68 ± .59	10.76 ± .82
	Total	52– 88	70.27 ± .61	7.33 ± .44	10.43 ± .67
Nasal Height-Length Index	Broad Forehead	90–102	97.93 ± .34	2.58 ± .22	2.64 ± .23
	Narrow Forehead	91–104	97.03 ± .38	3.52 ± .27	3.63 ± .28
	Total	90–104	97.39 ± .27	3.18 ± .19	3.26 ± .19

In a great many respects, to be sure, there is no perceptible difference between the "broad forehead" and the "narrow forehead" types. Some of the more important characteristics in which they do not differ from one another are shown by tables VII and VIII. The zygo-gonial index is the most constant of all in the Japanese series. No matter how this group is subdivided, whether by age into young and old, by broad versus narrow forehead, or by geographical regions, this feature does not vary. It will be noted further that both its range and its variability are relatively small.

In spite of the fact that both "broad forehead" and "narrow forehead" types are obviously Mongoloid, either or both may incorporate some non-Mongoloid elements, or they may belong to branches of the Mongoloid stem which separated long ago. Among many Tungusic and Mongol tribes, a narrow forehead is common, while among some other Oriental peoples, such as the Chinese and Koreans, this is not the case.[8] It may be that the "narrow forehead" type among the Japanese represents those whose ancestry is more largely Tungus or Mongol, which is to say northern Mongoloid, whereas the "broad forehead" type is derived from more southerly sources, such as the Chinese coast, via the Riu Kiu Islands. However, the relatively broad forehead which is characteristic of Koreans makes it just as easy to suppose that neither group is southern in origin. On the other hand, narrow foreheads are found among many Pacific Islanders,[9] the Ainu,[10] and other groups having, quite probably, more than a trace of Australoid ancestry. This would tend to indicate that the "narrow forehead" type is an early, the "broad forehead" type a later, migrant into Japan. The migration route is again left in doubt.

Some interesting points are uncovered, which may aid in the solution of the problem of the migration routes of the Japanese, if we compare the division of the present series into types char-

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[8] Shirokogoroff, 1923, pp. 102–108.

[9] Shapiro and Buck, 1936, p. 8.

[10] Hooton, 1930, p. 260.

TABLE VI

MORPHOLOGICAL CHARACTERS IN WHICH 27 JAPANESE WITH BROAD FOREHEADS DIFFER FROM 39 WITH NARROW FOREHEADS

		Coarse	Medium	Fine
Hair Texture	Broad Forehead	13	14	0
	Narrow Forehead	27	10	2
	Total	40	24	2

Hair Quantity		Very Scanty	Scanty	Medium
Moustache	Broad Forehead	9	11	7
	Narrow Forehead	3	27	9
	Total	12	38	16
Chin	Broad Forehead	13	7	7
	Narrow Forehead	11	20	8
	Total	24	27	15

		Dark	Mixed
Eye Color	Broad Forehead	23	4
	Narrow Forehead	29	10
	Total	52	14

		Absent	Internal	Median	External
Eyefold	Broad Forehead	4	18	16	15
	Narrow Forehead	9	22	25	26
	Total	13	40	41	41

		High	Medium	Low
Nasal Bridge Height	Broad Forehead	1	25	1
	Narrow Forehead	1	32	6
	Total	2	57	7

		Prominent	Medium	Receding
Chin	Broad Forehead	2	11	14
	Narrow Forehead	1	14	24
	Total	3	25	38

acterized by broad or narrow foreheads, with the types recognized by previous students. Among the Okayama, Satsuma, and Chikuzen groups there is a practically even division between the two, while out of 16 individuals of the Ishikawa type, only 2 have broad foreheads. In Dixon's Alpine group, 13 have broad foreheads and 8 narrow. In contrast, among the Caspians, Mediterraneans, and Proto-Australoids, 14 in all, 12 have narrow foreheads. It will be recalled that Matsumoto believes the Ishikawa to be largely of Miyato Dwarf stock, and that Dixon places Caspians and Proto-

TABLE VII

MEASUREMENTS AND INDICES IN WHICH 27 JAPANESE WITH BROAD FOREHEADS DO NOT DIFFER FROM 39 WITH NARROW FOREHEADS

(Constants are for the total series of 66 subjects)

	Range	Mean	S.D.	V.
Sitting Height	76– 96 cm.	85.36 ± .34	4.00 ± .24	4.68 ± .30
Biacromial	36– 46 cm.	39.12 ± .17	2.00 ± .12	5.11 ± .31
Face Height	110–141 mm.	120.73 ± .53	6.25 ± .37	5.21 ± .31
Rel. Sitting Height	49– 58	53.67 ± .17	2.01 ± .10	3.75 ± .18
Cephalic Index	71– 88	80.23 ± .28	3.63 ± .21	4.53 ± .26
Breadth-Height Index	68– 96	83.54 ± .60	7.19 ± .42	8.62 ± .50
Cephalo-Facial Index	83–101	93.59 ± .30	3.59 ± .20	3.95 ± .21
Zygo-Gonial Index	71– 85	77.80 ± .25	2.86 ± .16	3.65 ± .21

Table VIII

MORPHOLOGICAL CHARACTERS IN WHICH 27 JAPANESE WITH BROAD FOREHEADS DO NOT DIFFER FROM 39 WITH NARROW FOREHEADS

(Frequencies are for the total series of 66 subjects)

	Absent	V. Scanty	Scanty	Medium	Thick
Hair Quantity Head	—	2	10	48	6
Hair Quantity Temporal Region	—	20	10	24	12
Hair Quantity Eyebrows	—	—	11	39	16
Hair Quantity Upper Cheeks	11	27	21	6	—
Hair Quantity Lower Cheeks	10	31	16	9	—
Hair Quantity Lower Arm	4	30	17	3	—
Hair Quantity Hand	—	32	19	12	1
	Pale	Sallow	Light Tan	D. Tan	L. Brown
Skin Color Arm	14	22	12	—	—
Skin Color Cheek	—	9	24	21	12
		Marked	Medium	Striking	
Forehead Slope		4	41	21	
		Low	Medium	High	
Forehead Height		9	43	14	
		Marked	Medium	Slight	
Brow Ridges		2	9	55	
		Present	Absent		
Eyebrow Concurrency		15	50		
		Wide	Medium	Narrow	
Eye Opening		0	31	35	
		High	Medium	Low	Depr.
Nasal Root		2	13	36	15
		Depression	Level	Elev.	
Nasal Tip		39	18	9	
		Thick	Medium	Thin	
Nasal Tip		32	34	0	
Lips		24	30	12	

Australoids among the stone-age inhabitants of Japan. Again, therefore, it would appear likely that narrow foreheads represent the earlier, and broad foreheads the later migrants into the archipelago.

Further study of the types of Matsumura and Hasebe shows that, in contrasting platyrrhine with leptorrhine individuals, we find that 61 per cent of the Satsuma, 58 per cent of the Okayama, and only 31 per cent of the Ishikawa have narrow noses. Similarly, the length-height index of the Satsuma is 69.78, that of the Okayama 68.90, while that of the Ishikawa is only 63.94. The Chikuzen series is far too small to be worth consideration. The Ishikawa type is not only short and dolichocephalic, then, but is also on the verge of being chamaecephalic, and is actually platyrrhine and narrow-browed.

In these three last characteristics, the Ishikawa resembles the Wakayama series, a resemblance which is strengthened by their common possession of a more receding chin than usual among other Japanese. Yet the overlapping of the Ishikawa and the Wakayama series is even slightly less than might be expected, and the similarities mentioned above are not due to the recurrence of the same aberrant individuals in both groups. However, there are many physical characteristics in which the Ishikawa group differs from that of Wakayama, and, indeed, in which it seems to stand alone. The nasal root is particularly depressed, the nasal profile irregular, the head and face narrow, positively as well as relatively, and the brow ridges more pronounced than is the rule among Japanese. There is, however, no evidence of a stronger tendency toward body or facial hair in the Ishikawa group; and it must be remembered that the series is too small for its variations from the Japanese norm to be of great statistical significance.

Dixon's Alpine group, with 21 members, differs from the bulk of the Japanese in a number of ways aside from its high, round head, leptorrhine nose, and broad forehead. All the head and facial measurements are greater than ordinary, although the stature is not. The brow ridges are invariably slight or imperceptible. The eye is more apt to have an epicanthic, and much less apt to have an external fold than is usually the case in Japanese of the present series. The nose is more aquiline, with a depressed tip. The lips are thinner than among other Japanese, and the chin is more prominent.

Since neither the Ishikawa nor the Alpine group have as many as 25 members, it must be said that their peculiarities may be due to chance, and so lack real significance. However, they are at least suggestive, and their suggestions receive some degree of confirmation, although this is not complete, from a study of the series of 91 female Japanese also examined. The female Wakayama and "broad forehead" groups also differ from the bulk of the Japanese females examined in the same manner, for the most part, as do the males, although no bimodality is found in the frequency distribution of female forehead widths.

Furthermore, it must be borne in mind that the individuals examined are an emigrant group, who may not be quite similar physically to their stay-at-home relatives, or to the populations in their respective homes considered as a whole. Shapiro has found quite definite evidence that emigrants to Hawaii are a selected group, differing significantly from their relatives in Japan in many ways.[11] We do not know whether or not this is true for California as well, but it may well be. A comparison of the Japan-born measured in California with those measured in Hawaii and in Japan shows that the Californians differ slightly from both groups in practically every characteristic, being rather larger. In measurements in which the Japan-born in California are not larger than both the other two groups, and in indices, they are as likely to be similar to the Japanese stay-at-homes as to Japanese-born subjects examined in Hawaii.

If we contrast our total Japanese series with available data on the Chinese, there are numerous interesting differences, as well, of course, as a very great many close similarities. The Japanese are, for instance, shorter, yet longer headed, than the Chinese of Li Chi.[12] The former also have shorter, broader faces, and longer, narrower noses. Apparently the Japanese have darker skin color and eye color, too; but here the difference may be illusory and due to the subjective nature of the observations. In hairiness, hair form, and hair color there seem to be no real differences between the two. The Chinese chin, however, appears usually to be more prominent than the Japanese. A comparison with the figures of Shirokogoroff[13] is not so easy, for he certainly does not find nasion in the same location as do other students. Undoubtedly, however, our Japanese are shorter and have longer heads. Facial breadth diameters of the two are very similar however. The Chinese examined near Shanghai appear to be taller, more brachycephalic, and they also have smaller facial measurements and particularly narrow jaws. The Kwangtung Chinese are shorter than any other mainland group, though even they are taller than the Japanese, and their facial measurements are particularly small. No one of these geographical groups of Shirokogoroff seems to approximate the Japanese as a whole, nor does any one seem much more like the Japanese types suggested in this paper than any other. All bear a generic resemblance to the Japanese, but none a specific one.

Li Chi finds a dolichocephalic platyrrhine type, probably with a low cranial vault, in Chinese border provinces. In southern China this is apparently a short-statured type as well. He also finds a taller brachycephalic type, probably with a narrower nose, in the Yangtze Valley, with Kiangsu as the center of its purest form.[14] The former he believes to represent the aboriginal population of southern China, the latter the Chinese themselves, or "Descendants of the Yellow Emperor."[15] With very similar though not identical types in Japan, it has been suggested that somewhat similar origins may be assumed.

According to Shirokogoroff,[16] the earliest known inhabitants of the Pacific Coast of China, and of Korea and Manchuria as well, were Palaeasiatics whom he designates as Type B among the modern dwellers in the same region. They are said to be short, brachycephalic and platyrrhine, with low cranial vaults, broad foreheads, short faces, and rather more hairiness than typical Mongoloids. It will be noted that in some ways this description makes one consider the possibility of an Australoid element in this type. In successive waves, two later types, Gamma and Alpha, pushed out from the interior of the continent and displaced the Palaeasiatics from most of their original homeland. Type Gamma Shirokogoroff indentifies with the Tungus, and Type Alpha with the proto-historic expanding Chinese. The Tungusic element is described as short, dolichocephalic, and leptorrhine, with high cranial vaults, narrow foreheads and jaws, and much lighter pigmentation than either Alpha or Beta. Just as one might consider a mixed Australoid ancestry for Type Beta, so it is possible to imagine a similar mixture with Caucasian or, as Dixon would say, Caspian groups, for Type Gamma. The true Chinese, finally, are taller than the other two, with broader foreheads and jaws, with an undetermined nose form.

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[11] Shapiro, 1937, p. 112.

[12] Li, 1928, pp. 26–28.

[13] Shirokogoroff, 1923, p. 124; 1925, pp. 144–149.

[14] Li, 1928, pp. 44–49.

[15] Li, 1928, pp. 280–281.

[16] Shirokogoroff, 1923, pp. 101–112.

Even if we grant the validity of this reconstruction of types, we find it impossible to link any of them to types found among the present series of Japanese. Our Ishikawa type, very definitely not of Type Alpha, resembles in some respects the Tungusic, but in just as many other respects it resembles the Palaeasiatic group as described by Shirokogoroff. This is true also of the group from Wakayama. Were we to assume that types intermediate between Australoid and Caucasian at some remote date inhabited the Pacific Coast of Asia, their mixtures with various Mongoloid peoples at different times and places might explain not only the Beta and Gamma types of Shirokogoroff on the mainland, but also the southern Aboriginals of Li Chi and both the Ishikawa and Wakayama in Japan.

In the present Japanese series, the Alpine and "broad forehead" types overlap with the Okayama and Satsuma to a considerable extent, and share many characteristics with them. All have higher, rounder heads, and narrower noses than have other Japanese. The size of the author's series does not warrant a final conclusion as to whether these groups represent but minor variants of the same fundamental racial strain, but it is not at all unlikely. Possibly the "broad forehead" type and the Okayama, both tall, should be linked together, and the Alpine and Satsuma, who are shorter, should also be joined. The fact that emigration from Japan is so largely confined to certain areas in that country, and the small size of the present series, combine to make an estimate of the geographical distribution of the types proposed by this paper worthless. If, however, we consider the Okayama and "broad forehead" type to be linked, and similarly the Alpine and Satsuma, the distribution of our types ought to be more or less the same as that described by Matsumura and Hasebe for the Okayama and Satsuma. These types, it will be recalled, are said to live chiefly along the southern or Pacific and Inland Sea shores of Japan from Kagoshima to beyond Kyoto. Now Kagoshima is directly across the China Sea from the mouth of the Yangtze Kiang. The route to this part of Japan via the Riu Kiu Islands and Formosa from the Chinese coast is much more direct than that leading through Manchuria and Korea. It is in the provinces of Shantung and Kiangsu that the leptorrhine, high-headed brachycephals have lived since protohistoric times. And it is toward the southeast, rather than the northeast, that the "Descendants of the Yellow Emperor" expanded in early times.[17] Therefore, it seems probable that from the Chinese coast, either directly or via the Riu Kius, the Okayama, Satsuma, Alpine, "broad forehead" group migrated to Japan.

Stature differences are very often due to environmental rather than hereditary causes, and evidence is now accumulating which would indicate less stability in the cephalic index than was recently thought to be the case. Certainly neither has remained at all constant among the descendants of emigrant Japanese.[18] Examination of the map showing the mean values of cephalic index in Japan by provinces in Matsumura's study,[19] shows a remarkable concentration of brachycephaly in those provinces most distant from the sea. Also, table I of this paper shows that my subjects, almost all fishermen from coastal villages, are less brachycephalic and more uniform with regard to the cephalic index than Matsumura's, who presumably represent a random distribution throughout the prefecture. The head shape may, among Japanese, be affected by such climatic and nutritional factors as differentiate the seashore from the interior of the country.

Types which are characterized only by their stature and cephalic index, then, are probably of uncertain value as guides to the study of racial relationships. Only when combined with a large number of other features may one trust that there is some basis for belief in their real existence as genetic units. The groups discussed in this paper, although small, are indicative of the elements which have combined to form the Japanese people of today. The early neolithic and probably some of the later neolithic inhabitants of the archipelago apparently belonged to a branch of mankind sharing characteristics similar to those of the Australoid and to those of the Caucasian. This is also true of the living Ainu. Even among the Japanese themselves one finds, in the Ishikawa and Wakayama series, some obviously pre-Mongoloid elements. The other types discussed in this paper appear to lack Australoid or Caucasian features. Their average stature is not usually so great as that of any of the Chinese groups mentioned, and all have a greater mean head length. Yet in other respects those Japanese types with high cranial vaults are remarkably similar to the Kiangsu Chinese. Thus, the evidence points to an ancestry closely akin to that of the "Descendants of the Yellow Emperor" for the Alpine and "broad forehead" elements of the Japanese population.

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[17] Li, 1928, pp. 231, 274.

[18] Spier, 1929, pp. 1–30.

[19] Matsumura, 1925, pl. V.

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XII

THE PRONE BURIALS OF ANYANG

Li Chi

Preliminary Report of the Excavations at Anyang, #3, 1930.
Translated from Chinese by Cheng Te-k'un

IN the fall of 1929, a number of burials were discovered in the northern and northwestern suburbs of Hsiao-tun Ts'un, Anyang. Most of these burials belong approximately to the Sui and T'ang dynasties (605–906 A.D.) Four of the graves, however, are of a much earlier date; these contain bronze burial objects.

Ever since the Sung dynasty (960–1280 A.D.) Chinese bronzes have been unearthed and studied, but the excavation of Bronze Age sites has been, until recently, a monopoly of grave robbers. Hence the study of these objects has been in the hands of antiquarians ignorant of the age or provenience of the specimens in question.

Among the four Bronze Age graves which we found at Anyang, three are prone burials. This type of burial has been reported but once before in China; Dr. Andersson found a presumably similar grave in Kansu. Unfortunately, his field notes, which I examined, do not give sufficient information to make a comparison with the present site possible. As far as can be determined, these four instances in China are unique in the world.[1]

THE BURIALS

Grave 18:2. Date: October 12, 1929
Location: Middle part of diagonal Pit B, northwestern section.

The grave was rectangular in shape, irregular at both ends; the whole body was covered with red ochre.[2] The head pointed 7° west of north, the body stretching from the northwest to the southeast. The face and breast faced downward. The tips of both feet pointed to the northwest. The bones of the arms and chest were badly decomposed; a few pieces of the leg bones were preserved. A *ko*-shaped[3] bronze weapon (see fig. 4 a) was lying on the back of the body. The head was 2.96 meters from the surface of the ground.

Grave 18:3. Date: October 11–12, 1929
Location: Vertical trench at horizontal trench II, northwestern section.

The pit was rectangular, 2.20×.85 meters. The body, facing downward, was lying from north to south, the head to the north, the right hand under the right thigh, the left hand by the left thigh, and the left foot on top of the right. The skeleton was well preserved except for the face. To the north of the head there was one pottery *ku*[4] and one pottery *chüeh*.[5] (pl. XIV, c.)[5] A bronze *ko* (fig. 4 d), which was thoroughly oxidized with evident traces of wood, lay 13 centimeters to the east of the head. It was removed in wax. South of the *ko* was a small piece of scorched oracle bone. Between the thighs, there were two pieces of elongated stone implements, one black and the other white; the black one was longer than the white. The head was 2.65 meters from the surface of the ground.[6]

Grave 18:4. Date: October 19, 1929
Location: Vertical Trench VIII B and B West branch, northern Hsuao-tun Ts'un.

The grave was rectangular, 2.1×.85 meters, with the long axis running east to west. The head lay 5° north of west. The face pointed downward. The trunk and the legs lay east and west. The arms were parallel to each other, with finger bones scattered before them. The tips of the feet faced each other. There were mat marks under the left hand. Beyond the head lay the leg bone of a goat,[7] beyond which was a round-based pottery *min.*[8] By the left thigh lay a bronze *ku*, a bronze *chüeh* (pl. XIV, f), and a pottery *lei.*[9] By the right thigh lay a pottery *li*[9] The *li* and the *lei* were in fragments, lying about, and the *ku* had been broken into two halves. Although the skeleton was in poor condition, the majority of the bones have now been preserved with glue. The body seemed to be that of a youth in his twenties, since the third molar tooth was not yet fully erupted. Shovel incisors were present. The head lay 1.7 meters from the surface of the ground.

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[1] An example from Nubia (Reisner, G. A., *Archaeological Survey of Nubia*, Report for 1907–1908, vol. I, p. 194) is not comparable since the face-down position of the skeleton was acquired post-mortem.

[2] The Chinese original says "red coloring matter," as literally as one can translate it, presumably ochre.—Ed.

[3] A *ko* is a dagger-like weapon used in ancient China.—Ed.

[4] A *ku* is a cylindrical jar used to hold liquids.—Ed.

[5] A *Chüeh* is a spouted wine vessel.—Ed.

[6] The discovery of this grave was accidental. The pottery *ku* and the *Chüeh* to the north of the head appeared first. The workers reported the find after the two vessels were damaged, and their relative positions are not clearly recorded. The rest of the burial was excavated in a lateral pit.

The discovery of these three graves was a mere accident. At the beginning of the excavation it was not expected that burials of this type would be found. When Graves 18:2 and 18:3 appeared, it seemed probable that they belonged to the period before the Yin capital had been abandoned, since the northwestern section is located outside the limit of tillage but near the dwelling site. It would be natural for the people of Hsiao-t'un to bury their dead in this place. With the discovery of Grave 18:4, however, this hypothesis seemed questionable, for the location of this grave (vertical Trench VIII B and B west branch) is almost in the center of Yin-hsü, only 15 meters from the Ta-lien pit, where rich finds and building foundations indicate that this area was the center of human activities. Could it be possible that a cemetery should be so close to the busy center of the city?[10] It seems necessary for us to make a more thorough investigation of the hypothesis that these tombs belong to the same period as Yin-hsü cultural level.

The first problem is to determine whether or not we can be sure that these three graves belong to a single people and a single period. The similarities are as follows:

1. The bodies of the burials all face downward.
2. All four limbs are stretched out in each case.
3. All burials contain bronze mortuary objects.

The differences may be listed as:

1. The orientation differs in each case: Grave 18:2 to the northwest; Grave 18:3 to the north; Grave 18:4 lies 5° north of west.
2. The number and the arrangement of mortuary objects is not the same in each grave.
3. The body in Grave 18:2 is covered with red ochre, but this is not the case with the other two; mat marks are found in Grave 18:4, but not in the other two; Grave 18:3 contains a small piece of scorched oracle bone, but in the other two this is absent; Grave 18:4 was provided with a sacrificial animal, but the other two were not. These differences may be tabulated herewith:

GRAVE	18:2	18:3	18:4
Red ochre	present	absent	absent
Mat marks	absent	absent	present
Oracle bone	absent	absent	present
Sacrificial animal	absent	present	absent

Great significance may be attributed to the facts mentioned above, and some of them are very important. Burial customs do not change with the seasons; they express, in most cases, the most deep-seated faith of the people concerned. This conservatism is particularly evident in a theocratic society. Hence a people who practiced cremation would always follow the same custom; those who exposed their dead would always adhere to the same practice, and so would those who buried their dead in a contracted or diagonal position. A change in the burial customs means a radical change in the culture of the people. From the study of burial customs, archaeologists can reveal the rise and fall of the people in a given region. For example, in the *Archaeological Survey of Nubia*,[11] Professor Reisner deduces most of the evolution of Nubian culture from the study of its burial system. Thus, we may be safe in assuming that the prone burial practice represents a general custom of a people who lived during a certain period and in a certain region, although we have little material to serve as a basis for discussing the extent of this custom. Tentatively, it may not be too misleading if we select Hsiao-tun as the regional center. The date of the custom is a difficult problem, although the graves belong definitely to the Bronze Age. Since, however, the Bronze Age in China covers a period of more than a thousand years, it will be further necessary to determine to what part of this period the graves belong. The problem of the ethnic identity of the people involved is as difficult as that of the date. The skeletal remains, of course, throw some light on the problem; the shovel incisors reveal that the individuals buried probably belonged to the Mongoloid race. But this again is too broad a classification for our purposes; furthermore, race and ethnic identity are not always coterminous. Our primary interest here is to identify the people who made these burials, and the solution of this problem depends on the comparative study of other materials.

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[7] Identified by Dr. C. C. Yang of the Geological Survey of China.

[8] A *min* is a dish-like vessel.—Ed.

[9] A *lei* and a *li* are two types of jar.—Ed.

[10] Cf. the *Anyang Report* No. 2, figs. 4, 5.

[11] Reisner, G. A., *Archaeological Survey of Nubia*, Report for 1907–1908, vol. I.

The significance of the variations in practice found in the three graves needs to be considered. In the first place, the differences in orientation may represent a variation in time; it is quite possible that the Feng-shui system of geomantic divination was already practiced. The variation of the number of mortuary objects may be only a difference between the rich and the poor. When Tsŭ-yu inquired about mortuary objects, Confucius replied that the number varied according to the richness of the family. The property of the family has varied since the rise of the property system, and the period of prone burials, of course, was no exception. The red ochre, the mat marks, the sacrificial animal, and the oracle bone may be mere accidents. At first, we took it for granted that the oracle bone allocated the grave chronologically to the Shang period. But the excavation of Chêng-tsŭ-yai, Lung-san Tsinan, in the fall of 1930, revealed that oracle bones could be as late in date as the Ch'i knife. If we admit that the practice of oracle divination did not begin and end with the Shang culture, the oracle bone of Grave 18:3 immediately loses its significance for the dating of the relic. The use of the red ochre on the skeleton goes back to the Neolithic Age:[12] and is also found as late as the period of Ch'un-chu'iu (722–484 B.C.) and Chan-kuo (484–221 B.C.); it is, therefore, not an exact dating criterion. The use of sacrificial animals has a more limited range. "When those who remove the offerings enter," records the *Chi-hsi-li*, "there is stamping as before. They remove the napkins and wrap up the meat in parcels, taking the lower part of the joints for the purpose."[13] The sacrificial goat's leg found in Grave 18:4 furnishes a beautiful confirmation of the record of the *Book of Etiquette and Ceremonial*, which has been accepted as the Chou System. But when the Duke of Chou performed these rites, he did not invent them, but he merely followed the Yin customs and rearranged them for adoption by this own people. The ancient origin of the three *Books of Rites* was accepted by Confucius himself, and we may be inclined to believe that the Shang people knew this custom; or that some descendants of the Shang kingdom may purposely have buried their dead amongst the ruins of the old capital to express their love for the fallen dynasty.

These preliminary considerations remind us that the prone burials form a problem by itself. Its relation with Yin-hsü, characterized by the oracle inscriptions, has not yet been established.

STRATIGRAPHY

Grave 18:4 lies in the central part of the area in which the oracle bones were found. The stratigraphy in that area is as follows: The grave was found 1.7 meters below the surface of the ground, in the upper part of a layer of reddish-brown earth. The surface humus itself was about 20 centimeters thick. Between these two layers (the reddish-brown and the humus) is a thick bed of brown earth, which contains a lens of redeposited loess, 10 centimeters thick. The legs of the skeleton, and the nearby mortuary objects, which were discovered first, lay about one meter north of vertical Trench VIII B. The stratigraphy was recorded while excavation proceeded in the western portion of the trench. Here the upper layers showed no difference in arrangement from that described above, but a mixed bed of yellow and black earth appeared when the layer of redeposited loess was reached. It is to be noted that the reddish-brown stratum was slightly mixed with gray earth.

It may be noted in the section that under the burial some 70 to 80 centimeters of the reddish-brown earth occurs, which is directly superimposed upon the undisturbed loess.[14] Therefore, it may be inferred that the date of the burial falls later than the accumulation of the reddish-brown layer, and earlier than the formation of the brown layer.

Let us now compare this stratigraphy with that of the south wall of trench 12:5 of the same site, excavated during an earlier investigation, and described by Chang Wei-jen.[15] In the section described by Chang, the undisturbed loess is followed by a layer of grayish-brown earth, which corresponds to the reddish-brown layer of Grave 18:4 and must have been deposited at the same time. Above the grayish-brown earth comes a layer of brown earth—the same as the brown earth in the case of Grave 18:4. The cultural material of the Yin-hsü period is found in the grayish-brown layer.

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[12] Cf. *The Preliminary Report on Archaeological Research in Kansu*, by J. G. Andersson. Peking, 1925.

[13] Steele's translation, the *I-li*, 2.88.

[14] According to Chang Wei-jen.

[15] Chang Wei-jen, *The Stratigraphy of Yin-hsü*, in the *Anyang Report*.

According, however, to Chang's stratigraphical study, the Yin cultural stratum lies some 20 to 50 centimeters above the undisturbed loess. Stratigraphically, therefore, Grave 18:4 lies directly on the ground level of the Yin period.

The inference which might at first be drawn from this evidence is that the burial is of Yin age, but this is obviously absurd. It is conceivable that the body was that of a poor beggar, who died by the roadside and was buried by some passer-by. But the burial in question contains sacrificial animals and bronze funeral objects, which indicate that the deceased was someone of higher than middle class. Such a person would not be buried a foot or two beneath the ground. We must, therefore, admit that the burial took place when the ground surface was much higher than the Yin ground surface; a part of the brown layer had by then been deposited, and a lens of redeposited loess had been formed. This does not mean that the date is long after that of the abandonment of the Yin capital, but the facts seem to favor a date somewhat later than its abandonment.

Attention may be called to the mortuary objects associated with this burial. Five vessels were found and, with the exception of the bronze *chüeh*, they were either destroyed or broken. Of the round-based *min*, in front of the sacrificial animal, a broken piece was missing. The bronze *ku* was broken into two parts. The pottery *li* and the *lei* were both incomplete. The vessels do not seem to have been lying in their original position. The missing pieces of the *li* and the *lei* present another difficult problem. Let us examine the arrangement of the broken pieces as they were found. The *ku* was broken between the base and the belly. If the position of the base is taken as the original position, the upper part of the vessel occupied a position suggesting that it had been knocked over by a force coming from the northeast direction of the leg of the body. Thus, the mouth of the vessel was facing the southwest and the fissure at the base was most apparent on the southwest. The bronze *chüeh* had been knocked down by the pottery *lei*. The latter was broken at the belly, a part being badly damaged. This may show that the vessel was broken after it had been lying flat on the ground. But why were some sherds missing? The mouth of the *li* was facing north, one foot was resting upon the right leg of the skeleton, and some of these sherds were missing also. The lower part of the vessel was smoke-stained, signifying that it had been used in cooking. The direction of the forces that destroyed these vessels may be listed as follows:

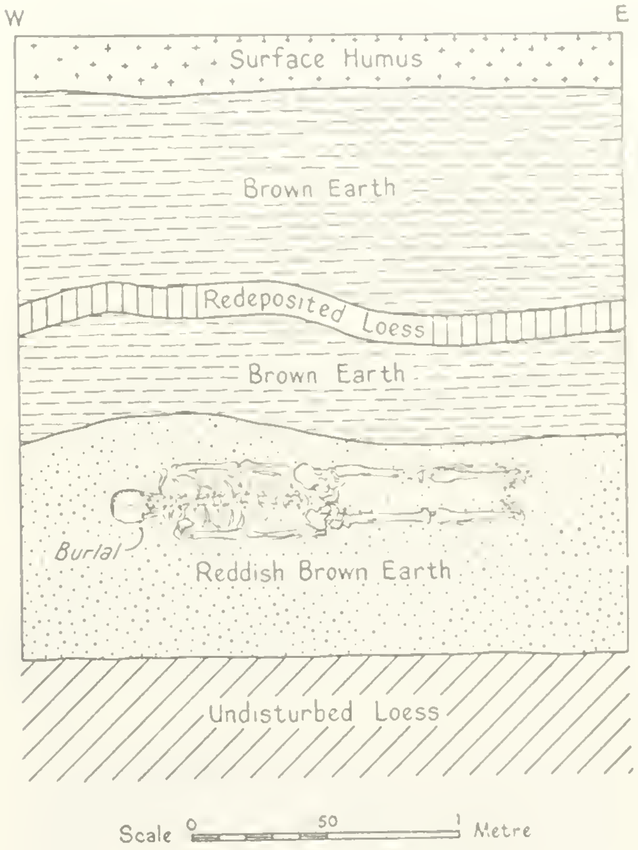

Fig. 3. Stratification of the North Wall, Burial 18:4.

Force 1 came from the northeast, running southwestward and knocked down and broke the bronze *ku*. Force 2 came from the north, running southward and damaged the pottery *lei* and knocked down the bronze *chüeh*. Force 3 came from the south, running northward, and knocked down and injured the pottery *li*. The sources of these three forces were near to each other. They might have originated near the upper part of the leg and operated downward. It is probable that the pottery vessels when found were not lying in their original position. They may have been placed on a level above the body. We cannot decide that this level was that of the top of a coffin, because no trace of the box has been found. It may have happened that some people were making a pit and caused the level to collapse. The vessels were thus forced to fall and break into pieces on both sides. The digger, on revealing the skeleton, covered up the pit again. This may account for the missing sherds. This explanation will be discussed again later on.

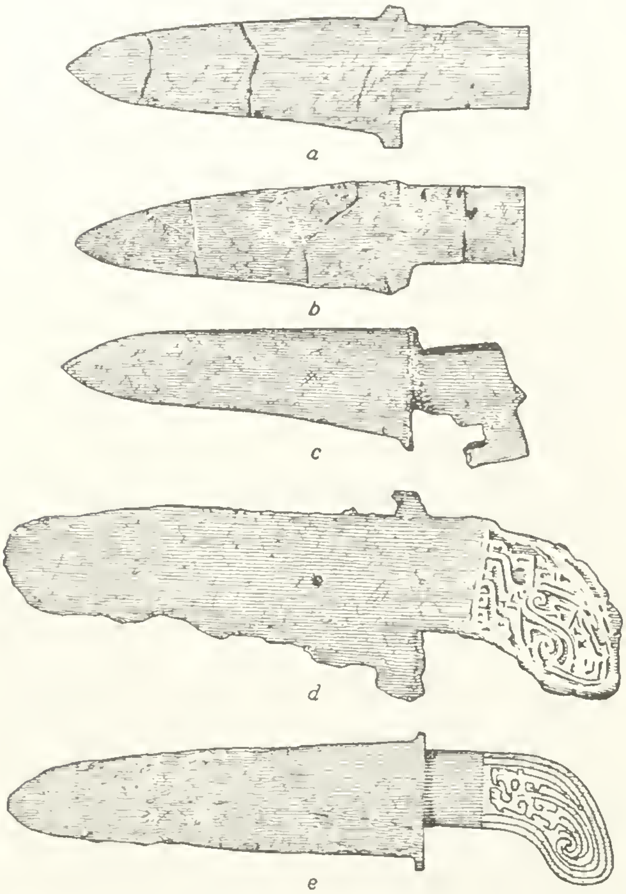

Fig. 4. The *Ko*, or ceremonial bronze dagger.

It is positive that a wooden coffin was not used. No traces of rotten wood were found. If there had been a coffin, the position of the leg of the sacrificial goat would need some explanation. If the leg had been placed inside the box, why should the offering be 10 centimeters above the head? If it had been outside of the box, why should there be nothing between the head and the animal leg? The mat marks under the left arm were very clear. If traces of a mat could be preserved, why not those of a coffin? There is no evidence of a coffin and we may confidently assume that the body had been wrapped up in a sheet of matting at the time of burial. The system of using inner and outer coffins at burial, which has been described in detail, may not have been popularly followed.

There may have been not only differences between rich and poor, but also variations due to differences in locality, faith, and custom. The character for *tsang*, meaning "to bury," originally meant "to store up, or to conceal," which did not require a coffin. Hsü Shên maintains that the character is composed of a corpse, a sheet of matting, and a bunch of vegetation, showing that to bury the dead meant wrapping the body up in a sheet of matting and concealing it under the ground.[16] This explanation is certainly not a mere fancy; it probably was based upon the popular custom of his time. The system of using inner and outer coffins might have been employed only by some of the rich nobles. The pottery coffin of Emperor Shun[17] and the wooden coffin of Emperor T'ang,[18] as described in the *Ku shih k'ao*,[19] may not have been wholly typical. If such coffins were used in their day, it can only be regarded as a similar case to that of rich people who ride in an airplane or an automobile in our day. The system of using coffins, as described in the *Sang-ta-chi*,[20] applies to the upper ranks of the court and has very little relation to the custom of the masses.

There are no traces of coffins found with the prone burials. The skeleton of Grave 18:2 was almost completely decomposed, yet the remains clearly indicated that the corpse was laid face downward. Here is a paragraph from my diary about the grave:

> In the diagonal pit of the northwestern section, two graves were found, both containing bronze weapons. The skeletons were both almost entirely decomposed. The lower burial was covered with red ochre, and the upper one not. The skeleton of the lower grave was found face downward, while that of the upper grave faced upward.

The stratigraphy of these burials was different from that of Grave 18:4. They were found in a bed of muddy yellow earth, from which no conclusion as to date could be drawn. But the upper grave was of great importance.

The body in Grave 18:5 was lying on its back. It was accompanied by bronze implements also. It lay above the prone burial. It is evident that Grave 18:5 is later than Grave 18:2 in date.

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[16] The *Shuo wên ku lin*, 486. (Translator)

[17] A legendary monarch, 2255–2205. (Translator)

[18] The first emperor of the Shang dynasty, 1766–1753.

[19] Chiao Chou, 201–270. (Translator)

[20] A chapter of the *Li-chi*, the *Book of Rites*. (Translator)

Moreover, stratigraphical evidence does not permit us to assume that either grave had been made by digging a hole from the side. Thus, two important facts may be derived:

1. In the Bronze Age burials, the body may be laid either face downward or on its back.
2. In the diagonal pit of the northwestern section, the prone burial may be considered as earlier than the burial with the body lying on its back.

The two burials contain only a bronze *ko* in each. In Grave 18:5 the *ko* was placed under the skull; in Grave 18:2 it was found on the back. The shapes of the bronzes were not identical.

Another piece of evidence may be noted to prove that the prone burial is earlier than the other grave. In Pit I 13:5 Grave 18:6 was found. It contained three pottery mortuary objects, one incomplete, one broken, and a third complete. The second one was a *li*, with shallow legs. Their discovery is important for the evolution of pottery forms, which will be discussed later.

The first pot looks like the upper part of a *tou*. The form of these two pieces of pottery is later than that of those found in Grave 18:4. Thus, we may conclude that Grave 18:6 is later than Grave 18:4 This is the second indication that in this region prone burial is earlier in date than burial with the skeleton lying on its back.

The stratigraphy of Grave 18:3 is very much the same as that of the diagonal Pit II of the northwestern section. The only difference is in the hardness of the yellow earth bed. If Graves 18:2 and 18:4 are not both prone burials, the stratigraphy itself cannot determine the date of the relics. The number of objects given to the dead was the same in both cases, with a slight variation in their characteristics. The *li* of Grave 18:4 had actually been used before while that of Grave 18:2 had never been utilized, and looked like a vessel made purposely for burial. Could the difference be taken to determine the date of the vessel? The problem requires further investigation.

Three conclusions may be reached from the stratigraphy of the graves and the arrangement and characteristics of the mortuary objects:

1. Prone burial was a custom existing in the Bronze Age.
2. This custom was still practiced after the abandonment of the Yin capital at Hsiao-tun.
3. In the Bronze Age, the prone burial was an older custom than that of burying the body on its back.

MORTUARY OBJECTS

The graves may naturally be dated by the articles found in them. Although the mortuary objects bore no inscription, yet they may be dated by drawing comparisons with other materials. Let us begin with the *chu-ping*, or bronze dagger.

The Evolution of the Chü-ping

I have boldly named these two bronze implements *ko* (fig. 4 a, d.) The great teachers in the past, who made a study of the *ko*, based their thesis upon the records in the *K'ao-kung-chi*.[21] This is naturally a safe way to take, but they have almost reached the limit. The earliest date for the *K'ao-kung-chi* may be put at the end of the Chou dynasty (1122–255 B.C.). It may be as late as the Western Han dynasty (206 B.C.–8 A.D.). Most probably, the system described by the author was based upon contemporary evidence. A professor of modern mechanics, for example, when lecturing on the locomotive, would naturally describe the most up-to-date machine. Unless he were lecturing on the history of the locomotive, he would never mention the construction of a machine that had been in use nineteen hundred years ago. The contents of the *K'ao-kung-chi* are mostly lecture notes in nature. The articles described in it are not only limited to a particular period, but also most probably to a particular region. Therefore, we cannot expect that everything described in the book could be correctly applied to articles belonging to the pre-Han periods. Many types of ancient vessels may be better understood, if we bear this point in mind.

As to the *ko* the *K'ao-kung-chi* says:

> The *Yeh-shih* . . . manufactures the *ko*, which is two inches in breadth. Its butt is double that dimension; the pennon, thrice; and the blade, four times. . . . It weighs three *lê*.[22]

For such a passage, we must first of all get the correct explanation of the text; for this the commentaries of Ch'êng Yao-t'ien may have the credit. Then we should bear in mind that the type represents only that of a particular period in a particular district. It cannot be accepted as representing a type existing before the *K'ao-kung-chi* throughout the ages. Thus, we may not only be able to obtain a correct idea of the development of the *ko* implement, but also some standardized type for the periods. It was rather hard for the scholars of the old days to acquire such a conception. Huang Po-ssŭ found out that in ancient times, the *ko* implement was made only of bronze.[23] He merely realized that the people of that time preferred bronze to the other metals that they knew and that they were expert in the method of bronze casting. But, unfortunately, he was unable to give a better and more scientific interpretation to his discovery. With the development of modern natural science, the conception of evolution may easily be applied. Dr. Andersson, who is fundamentally a Western scholar, was the first to notice the evolution of the implement *ko*.[24] He does not confine himself to the size of the *ko* but goes further to correlate many implements, the sizes of which do not conform to what has been described in the *K'ao-kung-chi*, and to establish the typological development of the tool. But the matter is not as simple as Dr. Andersson thought, because the typological differences occur not only with various periods but also with different regions. The facts are apparent, yet they have always been neglected by modern scholars. For instance, during the civil war in China, native swords and western bayonets were used side by side with hand-grenades and bombing planes. The same situation would surely be true during the Ch'un-ch'iu period. We never expect to find that Chi, Chin, Ch'in, Ch'u, Chêng, Wu, and other states would agree to use only the same type of weapon. Therefore, it is certain that the shape of the *ko* would differ in different places, and we must bear this in mind in studying some of the *chü-ping* of the *ko* type, which have been discovered at Hsiao-tun.

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[21] A chapter of the *Chou-li*, the Ritual of the Chou dynasty. (Translator)

[22] Cf. E. Biot, *Le Tcheou-li*, 2.493–495. Paris, 1851. (Translator)

There is another aspect that we have to take into consideration. Are there any differences between the implements that were intended for burial and those used in real warfare? According to the *T'an kung*,[25] Confucius maintained that "the mortuary objects are articles made for the spirits of the dead. The manufacturer knows that they are used at the burial. The objects may be provided, but they are not for practical use." Did these two kinds of objects develop at the same time? This is a problem that students of ancient implements ought to take into serious consideration. The paper houses, carriages, boats, chairs, and horses that are made for the dead in the present day are certainly not the type of objects that the living are using. This may also have been true in the old days and, therefore, mortuary objects would have their own evolution. They are not to be confused with articles in daily use. But this does not mean that all objects found in a burial are mortuary objects. Confucius' statement may not be taken to represent all burial customs. It is natural that some of the articles which have been used in the life time are buried with the dead. Otherwise, we cannot explain the fact that the *li* vessel found in Grave 18:4 is covered with soot.

It is evident that in studying the objects found in the prone burials of Anyang many limitations must be taken into consideration. First of all, we must see whether these objects are specialized mortuary objects, or if they are articles used for practical purposes and buried with the dead later on. These *ko*-shaped *chü-ping* present a difficult problem. They are very much oxidized. After comparing them with the bronze *mao* unearthed at Yin-hsü[26] (fig. 4 e), we might take them to be objects that were not intended for practical use. But after comparing them with those mortuary objects purchased at Anyang, the material of which is poor and the technique of which is simple, the bronzes from the prone burials would seem to be articles of daily use. The *ko*-shaped weapon from Grave 18:2 (fig. 4 a) bears some clear textile impressions at the handle. The textile may have been used for hafting, or in wrapping at burial. The carved *ko* weapon of Grave 18:3 (fig. 4 d) bears some traces of wood at the junction where the handle was hafted. The mortuary objects purchased at Anyang (fig. 4 b, c) do not have such traces, and they are really objects made for the spirits of the dead, because they were not meant for practical use and naturally it was unnecessary to have a hafting position. But the structure of the weapon from Grave 18:3 is really too delicate for a striking weapon, and it would be better to consider it as a mortuary object.

As to the form of these three *chü-ping*, are they to be classified under the *ko* or the *ch'ü*? The carved-handled weapon of Grave 18:3 may be placed by Chou An in the *K'uei-ch'ü* group.[27] Lo Chen-yü would call it *ko*.[28] The other two weapons from Graves 18:2 and 18:5 may be identified by Ch'êng Yao-t'ien[29] as *ch'ü*, while the Fêng brothers would name them *ko*.[30] I am inclined to follow Lo and Fêng. In fact, the purpose of the *ch'ü* implement is yet unknown. According to the *Ku-ming*,[31] it is a ceremonial weapon, signifying power and dignity. The purpose is similar to that of the Golden Axe employed by the emperors of the later dynasties. The *ch'ü* implement that was first discovered by Yen K'o-chun is perforated, with two projecting ridges in the middle. The prone burial implements are not of this type.[32] A rubbing of Yen's implement has been reproduced in the *Chou chin wen chün* (6, 66), but, unfortunately, the socket was not portrayed, nor was it mentioned. Without inspecting Yen's book, we should never realize that it was a socketed implement. Our antiquarians are very fond of collecting ink-rubbings, and they never realize that they have such a great handicap.

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[23] *On the bronze Ko*, the *Tung kuan yü lun*, 1.

[24] *An Early Chinese Culture*, the Bulletin of the Geological Survey of China, 5, pl. 5.

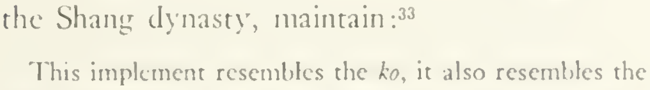
[25] The *Li-Chi*, the K'ai-ming edition, 17. (Translator)

[26] Fig. 3 and pl. IX, in the *Excavation of Yin Hsü in the Fall Season of 1929*, the *Anyang Report*, No. 2.

The Fêng brothers, writing on the *Chou ko* of the Shang dynasty, maintain:[33]

> This implement resembles the *ko*, it also resembles the *ch'ü;* the *ch'ü* has no pennon while the pennon of a *ko* is longer than this. It does not agree with the type described in the *K'ao-kung-chi* and therefore may probably be a *ko* of the Shang dynasty.

The Fêng brothers have indeed given a very good statement of the problem. Among the Shang materials we have at present, the type described in the *K'ao-kung-chi* cannot be found. It is probable that such a type never really existed in the Shang dynasty. But that the *ko*-type weapon did exist during the Shang dynasty is certain. The character *ko*, meaning military weapon, appears six times among the oracle records.[34] There are also several characters composed of *ko*. The character *ko* in the oracle record is not a perfect pictogram. The six specimens may be listed below:



In these characters, the blade of a *ko* is simply represented by a horizontal line. It is probable that the *ko* was a common weapon and anyone would habitually take the horizontal line for the blade. Among the bronze inscriptions, there are a number of characters that are real pictograms, showing the blade and the butt. The *Chin wên pien* has collected together some of these pictograms. They do not belong to a single period. If they represent the *ko*, they are not the type described in the *K'ao-kung-chi*. They do not have the pennon and may be called the *ch'ü*.

I suspect that most of the implements classified in the *ch'ü* group are only a kind of the carved *ko*, lying somewhere between a mortuary object and the real military weapon. Chapter 9 of the *Chin yü*[35] says that "the Lord Mu raised his engraved *ko* horizontally and advanced to receive the messenger." The commentary of Wei chao is too simple to furnish a concrete impression. And Ch'êng Yao-t'ien[36] says:

> There is another type which bears carved-out engraving near the butt. The engraving penetrates through the bronze to the other side. There is another type which is engraved and inlaid with copper stripes. There are also carved patterns which do not connect with one another. . . . I think they are all the descendants of a carved *ko*.

The argument of Ch'êng Yao-t'ien is most probably correct; otherwise we have to find implements that actually belong to the engraved *ko* group. According to the *Chin-yü*, it seems that this particular type of *ko* was used only by higher officers. The patterns engraved on the implement may be a symbol of his official rank. The function of such an implement may have been similar to that of a military saber, which is not necessarily meant for fighting, but which may be actually used in case of necessity. Therefore, though we classify this type of *ko* among those that are not meant for practical use, yet it must be distinguished from the mortuary objects.

Yen K'o-ch'ün has indeed made an extremely intelligent explanation of the *ch'ü*. But the two perforations may still be interpreted as a part of the engraved pattern. However, Yen's view must be accepted for the present, and the engraving and perforation of the object may be taken as criteria for the *ch'ü* implement. This *ch'ü* has another characteristic. It is a socketed implement and the wooden handle is not hafted to the butt of the blade. Scholars after Yen have totally forgotten about this point and placed many *ch'ü-ping* that are hafted by the butt in this group. Thus, the distinction between them becomes obscure.

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[27] *Chou chin wên ch'un*, 6, 68, 69, 78.

[28] *Yin hsü ch'i wu ch'un chen t'u k'ao.*

[29] *K'ao kung ch'uang wu hsiao chi*, *Huang Ch'ing ching chie*, 537, 43, 44.

[30] *Ch'in so*, 2.7.

[31] A chapter of the *Shu ching*, the Book of History. (Translator)

[32] *Liang lei suan i ch'i t'u shih*, 8.7.

[33] *Ch'in so*, 2.7.

[34] *Yin hsü wen chih lei pien*, 12.8.

[35] A chapter of the *Kuo yü*. (Translator)

[36] The *Ku* [illegible] *yü*, 537.28.

The carved pattern that appears on the butt of a *ko* has many varieties. There is a common motif which the antiquarian calls the "phoenix pattern." It is composed of a mouth, an eye, and a tail, in many kinds of combinations. We cannot ascertain that they look like the phoenix, but they do suggest a bird. The function of the *ch'ü-ping* is piercing, and the manufacturer hopes that his implement may be swift and accurate in action like a pecking bird: a chicken, an eagle, or a hawk. Although the antiquarian calls this motif a phoenix, yet the original may probably have been an eagle or a chicken. The carving of such a motif on the butt may originally have been a kind of sympathetic magic, with no aesthetic significance. But as time went on, the aesthetic function of the pattern became more and more apparent and it was taken to symbolize military ranks, and so other motifs were incorporated. If this assumption is correct, the *ch'ü* implement published by Yen may also be taken as a species of the carved *ko;* for the two perforated holes may be taken as a variation from the original bird motif.

From the above observations, the following conclusions may be reached:

1. The *ko* implement was originated in the Neolithic period (as discovered by Andersson.) It might have been a variation of an axe. The pennon had not yet been developed.

2. After the introduction of bronze casting, military weapons were mostly made of that metal, and the *ko* was, of course, not an exception. But at first, it still kept the shape of the stone implement, just as in the case of the stone and bone arrowheads.

3. The efficiency of the *ko* depended fundamentally on the hafting. By gradual practical experience the manufacturer realized that some improvement might be made in the *ko*. The important point was the outer ridge of the butt, where the handle was being hafted. The longer the ridge the stronger hafting it would make. Thus, developed the pennon of the implement.

4. Besides the improvement made on the blade of the *ko*, an improvement was also introduced in hafting. At first a small hole might have been made at the butt of the *ko* and in the part of the handle which was to hold the butt. A hole might have been made on each branch also. A piece of wood might have gone through these three holes, with the butt of the *ko* in the middle. Thus, the *ko* was hafted more firmly with the handle.

5. This improvement to the *ko* was not at all perfect, however; so other holes might have been made along the edge of the pennon. A third and final improvement was made by making holes on the pennon itself. Those who used the implement realized the importance of such a way of hafting and thus more holes—sometimes three or four—were added to the pennon, which became longer as the number of the holes increased. The *K'ao-kung-chi* may have based its statement upon this experience, when it says that a *ko* "is two inches in breadth. Its butt is double that dimension; the pennon, thrice; and the blade four times."

The classic also records the experience obtained from the several hundred years of *ko* manufacture:

> Si le fanon a trop d'avantage (est trop ouvert), alors il ne pénètre pas dans les chairs; si'il a trop de courbure, alors il n'élargit pas la blessure; s'il est trop long en dedans, alors il diminue l'avant du javelot; s'il est trop court en dedans, alors il n'y a pas de rapidité.[37]

This is indeed the result of years of practical experience. It implies that in the manufacture of the *ko* in the past the four defects mentioned were recognized, and it gives warning to later manufacturers not to make such mistakes again.

6. War and fighting were common in the old days. Military weapons were one of the necessities of life. The best use of the weapon was expected during the war, and these weapons might also be used as a symbol of dignity and adornment in times of peace. They were buried with the owner after his death. Some were accompanied by mortuary objects for use in the other world.

7. Mortuary objects had less connection with actual life, and the *ko* for the use of burying with the dead did not need to be improved from time to time. The evolution of the mortuary *ko* was, of course, slower than that of the military weapon. The development of the implement may be listed in the following stages.[38]

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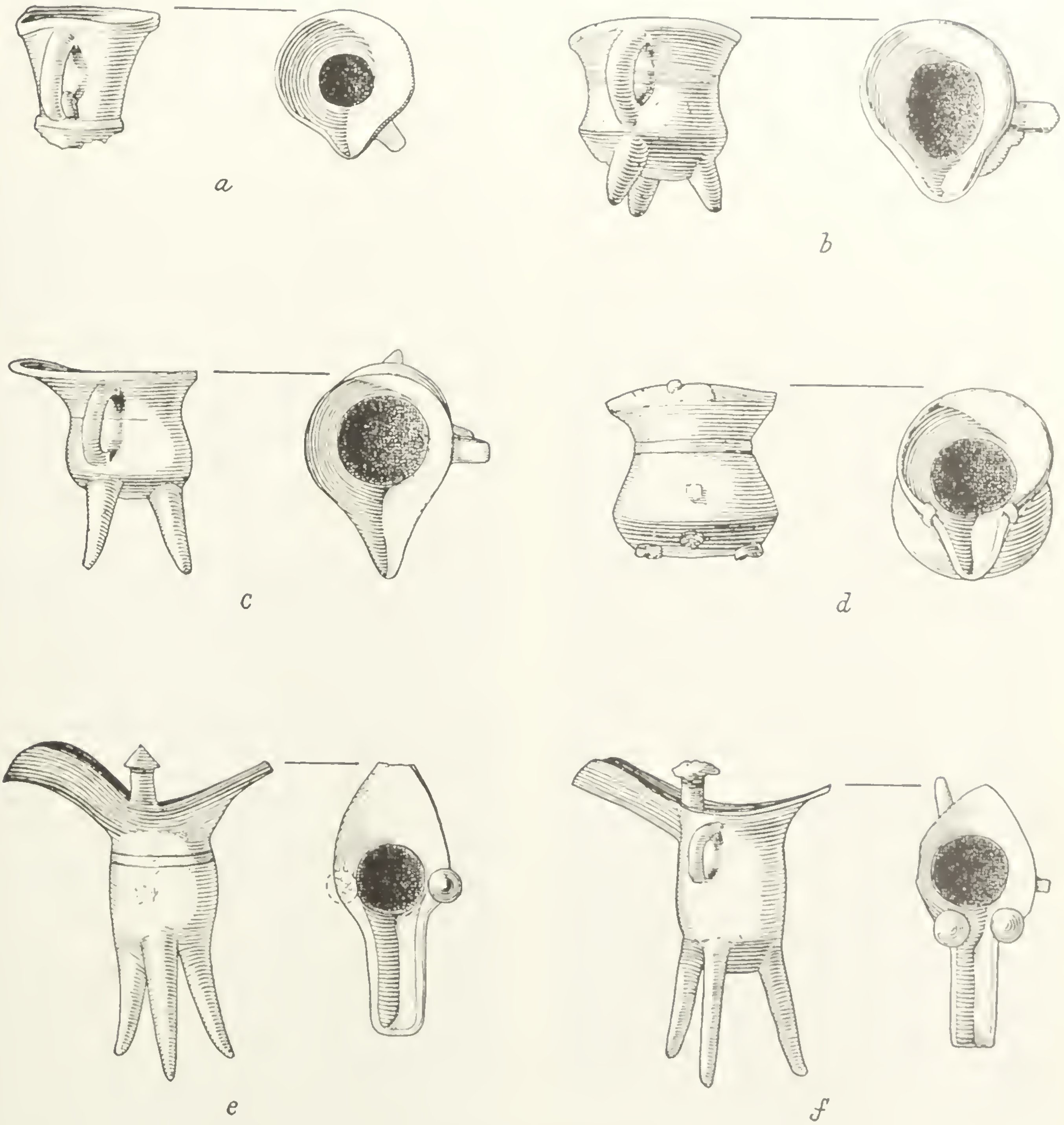
[37] Biot, E., *Le Tcheou-li*, 2.494. Paris, 1851. (Translator)

[38] Andersson, J., *An Early Chinese Culture*, pl. V, Peking. 1935.



Evolution of the *Chüeh*.

a. Stone *ko*, without perforation or pennon	Neolithic Age
b. Bronze *ko* (including both carved and mortuary), without perforation or pennon	Shang and Chou Periods
c. Bronze *ko*, with single perforation and pennon	
d. Bronze *ko*, with two perforations and pennon	Ch'un-ch'iu Period
e. Bronze *ko*, with three perforations and pennon	
f. Bronze *ko*, with four perforations and pennon	K'ao-kung-chi Period

8. The socketed *ch'ü* probably belongs to a different sequence of development. It is a completely different product.

According to the stages of the development of the *ko* mentioned above, the *ko* unearthed in Grave 18:2 belongs to the early Bronze Age. But as we have already said, the shape of a mortuary object does not necessarily develop uniformly with that of a military weapon, so the object may be of an early type; yet it does not mean that the burial is early too. The *ko* found in Grave 18:5 is simpler in type than the one from Grave 18:2, but they are both mortuary in nature and therefore bear very little time significance. The carved *ko* of Grave 18:3 is more advanced than the other two mentioned above. There is a hole in its butt, which has traces of the wood that connected the *ko* to its handle. The bronze has been very much oxidized, and it is hard to ascertain whether it was mortuary. But the carving on the butt is very deeply engraved, and it is more substantial in nature than a mortuary implement, so we may presume that it was used for practical purposes. The dead owner must have had quite a high social standing in his life-time and, therefore, was entitled to have a carved *ko* in his grave. If this assumption is correct, the difference between the carved *ko* and the other two implements again does not have any time significance. If the carved *ko* is actually a military weapon, it may be placed typologically between stages b and c, or between the Shang and the Chou dynasties.

Ku AND *Chüeh*

The *ku* and the *chüeh* vessels have not yet been clearly defined with regard to their shape and size. The names were given by the Sung scholars. The vessels we have at present bear no inscriptions which give the names of the vessels, and so we have no way of checking them.[39] In his article on *Some Ceremonial Utensils and Musical Instruments of the Yin and the Chou Dynasties*[40] Jung Kêng, a modern antiquarian, defines the *chüeh*[40]

> which in addition to a handle which is attached to the side, has a spout and "tail." On the brim are two "posts," and it stands on three feet.[41]

The bronze vessel that was found in Grave 18:4 (pl. XIV, f) stands on three feet, has two "posts," a spout, a "tail", and a handle at the side. It is exactly similar to what has been defined by Jung Kêng; so we may call it a *chüeh* for the time being.

The pottery vessel unearthed in Grave 18:3 stands on three feet and has a spout and a handle. (Pl. XIV, e.) Shall we call it a *chüeh*? Two "posts" and a "tail" are lacking. That is a problem.

As to the *ku*, Jung Kêng gives the following definition:

> A jar to hold liquids, of cylindrical shape, broadening slightly at the base, widely at the top, and with suggested thickening at the center; some with four quadrangular ridges; others with no ridges, it is to these that Confucius refers when he speaks of a *ku* without ridges.[42]

The second bronze vessel found in Grave 18:4 conforms to this definition and may be named a *ku*, though two of the four ridges on the lower part of the vessel have been destroyed. The second pottery vessel found in Grave 18:3 is not ridged, but it also conforms to Jung's definition. Is the pottery *ku* without ridges later in date than the "half-ridged" bronze *ku*? This is the second problem I propose to discuss.

We found two pottery vessels in Grave 18:3; one resembles a *ku* and the other, a *chüeh*. In Grave 18:4 there are only two bronze vessels; one is a *ku* and the other a *chüeh*, just as defined by Jung Kêng. Let us discuss these vessels, in the light of the above-mentioned definitions. These two vessels must have been related to each other. The capacity of the four vessels was measured. Powdered sand was first put in a measuring cylinder and was then poured into the vessel until it was filled to the brim horizontally. The measurements are given on the following page:

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[39] Wang Kuo-wei, the *Kuan t'ang chih lin*, 3.12.

[40] *Yenching Journal of Chinese Studies*, 1.83–142.

[41] *Yenching Journal of Chinese Studies*, 1.101, Supplement, No. 1, 12. (Translator)

[42] Yenching Journal of Chinese Studies. 1.102, Supplement, No. 1.12–13. (Translator)

Vessel	Capacity	Proportion
Bronze *chüeh*	210 cc.	*chüeh*:*ku*=1:2.43
Bronze *ku*	510 cc.	
Pottery *chüeh*	275 cc.	*chueh*:*ku*=1:1.35
Pottery *ku*	420 cc.	

The capacity of the bronze *ku* is just less than two-and-one-half times that of the bronze *chüeh*, while the capacity of the pottery *ku* is more than one-and-one-half times that of the pottery *chüeh*. According to the *Han shih*,[43] a *chüeh* contains one *shêng*[44] and a *ku* two *shêng*. But according to the *K'oa-kung-chi*, a *chüeh* has a capacity of one *shêng* and a *ku*, three. The measurements we have from the actual objects do not confirm either of these two records. Have we given wrong names to these vessels, or are the records in these two books wrong? This is the third problem we have to discuss.

But the most important problem we have to consider is this: Could we give a date to these vessels from a typological study of them and through this indirectly give a date to our burials? In discussing this problem we must bear in mind the typological development of ancient vessels. In my article on the pottery of the Shang-yin period,[45] I have said: "The shape of a ritual vessel is derived from that of a vessel for practical use and the shape of a bronze vessel comes from that of a pottery vessel." The conclusion is based on the typological development. Typologically, these two sets of *chüeh* and *ku* were found in the prone burial and may have the same significance. But shall we take the pottery vessels found in Grave 18:3 as a variation of the bronze vessels, or as the prototype of the bronze vessels? We cannot ascertain that the shape of the pottery *ku* is earlier than that of the bronze *ku*, but we feel sure that the pottery *chüeh* is more primitive than the bronze *chüeh*. All *chüeh* have "posts," but this pottery vessel does not have them. Pottery *chüeh* with two "posts" have already been found,[46] and show that the Yin potter could copy a bronze vessel very closely. The reason that the pottery *chüeh* does not have "posts" could most probably be that it is an earlier type. Some may say that the vessel is not a *chüeh* but a *chio*, or has another name. But according to traditional description, a *chio* does not have a spout, while this vessel has one. Moreover, it was buried in a tomb together with a *ku* and its function must be similar to that of the bronze *chüeh* that was buried together with the bronze *ku*. The Academia Sinica has purchased at Anyang several pottery vessels of the same type. Through comparative studies of these vessels, the typological development of the pottery *chueh* can be clearly seen. Pl. XIV shows two different views of these vessels. From these figures the gradual development of the vessel can be traced until it assumes the form of a sparrow. The *chüeh* is a vessel for containing wine. It must have a spout, so that the liquid may be poured out. The early spout is only a small beak projected from the brim, as shown in pl. XIV, a and b. It is clear that the *chüeh* is not a drinking cup, but a wine container. We have found at Yin-hsü several small pottery vessels which are similar to modern wine cups and may have been used for the same purpose.

Technically speaking, the more the spout develops, the more difficult becomes the making of the vessel. The projecting spout is hard to bake. The expansion and contraction of the clay may easily deform that part of the vessel. If the spout projects too far out, it may drop off before it is baked. Necessity gave rise to the second part of the development. At first additional weights were added to the brim of the spout to keep it from falling off. We have a vessel of this type (pl. XIV, d and e) which has two pieces of additional clay on the lip at the base of the spout. They must have been added for mechanical reasons. But they fail to function as the spout becomes longer. The largest spout must have been made separately and connected to the vessel after baking. At this point the potter must have been faced with the problem of how to keep it from falling off. The "posts" were then invented to solve the difficulty. It is clear that the original function of the "posts" was only to fasten the spout to the vessel and that is why they stand at the point where the spout is joined to the vessel. Although the "posts" became, in the later period, ornamental and "puzzling," yet their original practical function has never been overlooked.

The growth of the "tail" may be explained in the same way. As the spout became longer, the vessel would easily lose its balance and fall over. The "tail" was added to keep the center of gravity intact.

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[43] A text and commentaries of the *Shih-ching*, the *Book of Odes;* compare the Chinese Classics IV 1.10. (Translator)

[44] A Chinese pint. (Translator)

[45] *A Preliminary Discussion on the Shang-yin Pottery*, the *Anyang Report*, No. 1. (Translator)

[46] Cf. *A Preliminary Discussion on the Shang-yin Pottery*, pl. XV, a.

All these technical facts were forgotten in the later period. The classical scholars pay no attention to these miscellaneous details and fail to explain the significance of the facts. Hsü Shên says that the vessel looks like a sparrow. The *K'ao ku t'u* maintains that the "posts" are meant for placing the vessel upside down. Ch'êng Yao-t'ien refuses to accept this explanation.[47] "The two brims of the spout and the tail form the three points on which the vessel could be placed safely upside down. What is the use of the posts?" He asserts that the "posts" are meant to regulate the drinking appetite[48] and this explanation may have arisen from the appearance of the shape.[49]

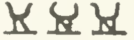
The explanation discussed above is based, of course, on the pottery *chüeh*. Why should a bronze *chüeh* retain such a shape, when it is cast? My answer to this question is itself an evidence that the vessel is the prototype of the bronze.

A complete specimen of the *chüeh* has not yet been found in the cultural stratum of Anyang, but we have found a sherd of a *chüeh*, which is decorated with a pig design.[50] We also unearthed a white pottery "post," which may belong either to a *chia* or to a *chüeh*, and it is evident that the use of "posts" on a vessel was popular at that time. We may safely assume that the shape of the *chüeh* reached its perfection then. The pottery *chüeh* from Grave 18:3 may represent an earlier stage of its development; it has neither the "tail" nor the "posts." This pot is a mortuary object, and it cannot be taken as evidence that its date is earlier than the cultural stratum of Anyang, but the bronze *chüeh* seems to be of later date.

We have not enough materials to make a correct comparative study of the evolution of the pottery *ku* shape.

The *ku* of Grave 18:3 deserves special attention. The vessel is without ridges. The ridges of a bronze *ku* are the result of the joining of the moulds. A bronze mould has been found at Anyang. It is a part of the mould for the base of a *ku* and is about one-fourth part of the base. The bronze *ku* of Grave 18:4 has decorations on its belly and on its base, which is composed symmetrically of four parts. The motifs on these sections are similar to each other, only with a different arrangement on the right and the left sections. They are also similar to the pattern on the mould. Thus, the mould and the vessel are approximately of the same date. But the date of the burial is uncertain, and its relation with the Anyang culture may not be determined from this evidence.

POTTERY

Apart from the pottery *ku* and *chüeh* of Grave 18:3 three other pottery vessels were found in Grave 18:4. These vessels are most significant in the dating of the prone burials. It is evident that the *li* vessel had been put to practical use. The other two vessels, though their names are as yet undetermined, are common shapes in Yin-hsü. The vessel that was found beyond the goat's leg bone is represented in the Oracle records by these symbols: . These characters are identified in the *Yin hsü shu ch'i k'ao shih* as the prototype of the character *min*, which is a rice vessel for eating. In Grave 18:4, the goat's leg was placed above the head of the body, with this vessel placed immediately beyond the goat's leg. This may signify the meaning of the rice eating. I am inclined to believe that the vessel is the prototype of the *tou*. The tall pedestal shape of the *tou* vessel is absent in the Anyang pottery, but the *min* type is quite abundant. Our excavation at Ch'êng-tsŭ-yai, Lung-shan, Shantung, reveals two cultural strata. In the upper layer, which is Bronze Age in date, the *tou* vessel is abundant. In the lower layer, of Neolithic date, the *tou* shape is absent, but again the *min* vessel is found in large quantity. The high pedestal shape of *tou* may have been a product of eastern China and gradually may have become popular in the early part of the Chou dynasty. The prototype of the *tou* is the *min* vessel found at Anyang. The *min* of Grave 18:4 is of the same type as the *min* found in the cultural level, so that the date of the burial cannot be much later than the abandonment of the Yin capital.

The *li* is one of the common types of pottery vessels at Anyang. The vessel of Grave 18:4 is almost similar to those found in the cultural level. I have said in my discussion on the Shang-yin pottery, "The typological development of the

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[47] *On the Chüeh*, in the *T'ung yi luh*.

[48] I.e., the posts would touch the cheeks if the drinker helped himself too hastily with the cup. (Translator)

[49] Cf. Jung Kêng, op. cit., 102.

[50] Cf. *A Preliminary Discussion on the Shang-yin Pottery*, pl. XV.

li vessel as discussed by Andersson may be accepted. In the beginning, it was only a vessel composed of three pointed bottles. The legs were then the longest and the most nearly hollow of any in the typological series. It developed gradually into an almost flat-bottomed vessel."[61]

I am glad that my earlier statement is now supported with actual facts. An almost flat-bottomed *li* was found in Grave 18:6 last autumn. In the same burial two other pottery vessels were found. Among them is a vessel which resembles the upper part of a pedestaled *teng*. The discovery of these two vessels lying side by side is a very important achievement, because, in the cultural level of Anyang, *min* vessels occur, but not the pedestaled *teng;* and "half-shallowed" hollow-legged *li* are present, but not the flat-bottomed *li*. Therefore, the two vessels of Grave 18:6 are, first of all, later than the Anyang cultural level and, secondly, later than the prone burial 18:4 in date. This means that Grave 18:4 is near to the cultural level in date and is earlier than Grave 18:6, which is a face-up burial. There are some similarities in the pottery of these two different types of burials, Grave 18:6 and Grave 18:4. The pottery vessels unearthed are all broken and incomplete. Judging by the margins of the potsherds, the destruction may have been effected at an early date. They are mostly vessels for practical use and not for mortuary purposes only. If broken pots were actually used for mortuary purposes, it would certainly be an interesting fact.

The third pottery vessel found in Grave 18:4 is a broken *lei* with two handles, which may have had a ring attached to each of them. The lower part of the vessel and the rings are missing. The name is given because the vessel has a small opening and handles on the shoulder, which are the chief characteristics of the vessel. It is also a common type found at Anyang. The technique of making the handle is similar to that of most of the handles appearing on the Shang-yin pottery. The paneled decoration and the cord marks on the vessel are also typical of the pottery of the Anyang cultural level.

Therefore, on the evidence of these three pottery vessels, we may conclude that the date of the burial could not be very far removed from that of the cultural level of Anyang.

TWO STONE IMPLEMENTS

In Grave 18:3, two stone implements were found. They are evidently mortuary objects, especially made to be buried with the dead. For lack of comparative material we are unable to determine the type of the implements. At first, I took them to be sword handles, but my friend, Mr. Hsü Chung-hsü, does not agree with me. He maintains that the sword is a very late weapon and did not possess such a crude handle. He suggests that the two objects are models of two musical instruments, the *ch'in* and the *sê*. But these two implements, though slightly resembling the *ch'in* in shape, have no ridge for the strings. Furthermore, they do not even resemble the *sê* in shape. The earliest stringed instruments have not been found; the oldest we have at present is a *ch'in* in the Museum of Antiquity in Peiping, which is supposed to have once belonged to Wang Hsien-chih. The two stone implements do not look like it either. They were found between the femora in the burial. Is that a position for such musical instruments? That is another problem.

CONCLUSION

According to the above report on the prone burials of Anyang and the discussion of the mortuary objects found in them, the following conclusions may be reached:

1. Prone burial was a custom practiced in China during the middle part of the Bronze Age. Its date seems to be approximately the same as that of the Yin-hsü culture, because the types of objects found in the burial are mostly similar to those found in the cultural stratum at Anyang, especially the pottery *min*, the pottery *lei*, and the pottery *li* of Grave 18:4 and the design on the bronze *ku*.
2. The corpse was covered with a mat; there is no trace of a wooden coffin.
3. Sometimes the corpse was painted with red ochre.
4. After the abandonment of the Yin capital at this site, the prone burial custom continued in practice for some time in this region. But before the end of the Bronze Age it was replaced by the face-up burial. Thus, we may assume that it was a burial custom of the Yin people.

The typological development of these ancient objects may also be determined as follows:

5. The method of manufacturing the *ko*, as de-

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[61] *Anyang Report*, No. 1, 53

scribed in the *K'ao kung chi*, may be taken as the method practiced not earlier than the later part of the Chou dynasty. It was a result of years of experience. During the period of the Shang dynasty and the beginning of the Chou, a *ko* had usually a very small pennon, and some did not even have a pennon.

6. The carved *ko* was merely a type included in the *ko* class of implements. Presumably, it may have represented some social class distinction.

7. The bronze *chüeh* was evolved from the pottery *chüeh*. The earliest type of the pottery *chüeh* did not have the "posts" nor the "tail" and had only a small spout. As the spout became larger and longer, the "posts" and the "tail" gradually evolved. These were but a matter of technical necessity and bore no ritual or sacrificial significance.

XIII

OBSERVATIONS ON THE BRONZE AGE IN THE YENISEI VALLEY, SIBERIA

James H. Gaul

THE fertile valley of the upper Yenisei, between the Saian mountains and the Siberian *taiga* belt stretching past Achinsk and Krasnoyarsk, witnessed in antiquity a flourishing series of prehistoric cultures which have been frequently considered as the creators of the Eurasiatic Animal Style bronzes found from Hungary to the Hwang-Ho. Enclosed by mountains and heavy forests, the valley is a cul-de-sac some 200 miles long and 120 miles wide.[1] In this basin, commencing in 1920, S. A. Teplouhov[2] explored and excavated 144 graves for the University of Tomsk Expedition. His two Russian reports,[3] the "famous classification"[4] fundamental for any investigation of Eurasiatic interrelationships, the culture of the Scyths and the Animal Style, and possibly of the path of emigrant cultures to the Americas,[5] are the basis of this study.[6]

Teplouhov began excavations near Bateni village, some 60 miles north of Minusinsk, on the left alluvial and loess[7] bank of the Yenisei, discovering a series of Palaeolithic stone implements of Yenisei-Siberian facies,[8] and Palaeolithic "culture-levels" with stone and bone objects on the Tashtik affluent of the Yenisei at Bateni.[9] Faunal remains included mammoth, northern deer, and polar fox. A microlithic industry is also reported to have been found on the river terrace.

A. THE AFANASIEV CULTURE

The first of the post-Paleolithic complexes differentiated by Teplouhov is the Afanasiev culture,[10] named for Afanasiev Mountain just south of Bateni village. On a river terrace some 2 kilometers long and from 30 to 35 meters in width, lying between the mountain and the Yenisei, was a cemetery of 20 to 25 graves, extending the width of the terrace over some 300 meters. Teplouhov dug 18 of these graves.[11]

The Afanasiev graves were oval, square or rectangular trenches, usually expanding from a narrower base to a wider top. All were filled with stones, especially near the surface (fig. 5 and pl. XIX, 1). They formed a compact area, some 2 to 7 meters in diameter, over the grave-mouth. The grave pits averaged 1.5 meters in diameter, 0.5 meters in depth, the deepest attaining 1.75 meters.

Orientated to the southwest, the flexed burials lay with arms contracted, males usually on their right side, females on their left. Exceptional was Grave No. 9, containing an extended skeleton lying on its back with legs slightly bent. In Grave No. 11 were a female and a male, lying side by side, the right hand of the one clasped by the left hand of the other. Between their lower legs were two pottery vessels and the skeleton of an infant. Such melancholic pathos was the exception, however. In nine graves there was but one skeleton. In four graves were double burials, two of these being of a female adult and a child. In two graves were three skeletons, consisting of two adults and a child. In Grave No. 6 there were four adults and one child, and in Grave No. 15 were three females, one male, and three children. These plural burials were all at the same level within the graves. In six tombs, however, the interments were at different depths. In Graves Nos. 5 and 9 one burial was superimposed above another. In Grave No. 11 there was one skeleton in the top of the grave and three below. Two skeletons overlay a third in Grave No. 12. The lower burials in all cases were undisturbed, but the upper ones and the mortuary gifts with them were usually disarranged.

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[1] Tallgren, 1917, pp. 4 ff.

[2] Teplouhov's untimely demise is reported in Tallgren, 1936, p. 149.

[3] Teplouhov, 1927, 1929.

[4] Tallgren, 1937c, p. 88.

[5] Strzygowski, 1936, p. 46.

[6] I wish to thank Dr. M. I. Rostovtsev and Mr. Lauriston Ward for pre-publication reading and criticism of this paper.

[7] Fisher, 1935, p. 73, conjectures the loess to have been deposited somewhere between 3250–1300 B.C., but apparently on little evidence; see Richardson, 1937, p. 240.

[8] For description see Merhart, 1929, p. 192; Bonch-Osmolovskii, and Gromov, 1933; Berezin, 1936, and *Paleolit S.S.S.R.* (various authors), 1935.

[9] Teplouhov, 1927, p. 61.

[10] Teplouhov, 1927, pp. 62–77.

[11] Twelve kurgans of this culture were recently excavated by Kiselev at the junction of the S'id'i and Yenisei rivers between Bateni and Minusinsk, see Kiselev, 1937a.

In the northeast part of Grave No. 15 lay the bones of a female. These and the skull were colored red. The interior of the skull was likewise reddened, and Teplouhov believed that this redness may have been caused by the action of bacteria (*Bacillus prodigiosus*).[12] No mention of ochre is made. Next to the adult female was the skeleton of a small child, and around the adult and child had been disposed the mortuary gifts. Three other female skeletons were also found in the grave in contracted position, but with no gifts. Teplouhov conjectured that this tomb represented the burial of a wealthy woman, the three associated females being servants.

The relics of food found in the graves indicated a hunting-pastoral economy. The bones of domesticated cattle and sheep, as well as horse bones, were recovered.[13] Seventy sheep astragali in one grave induce one to conjecture that gaming with bones was a Minusinsk dissipation at that time as it is now from Central Asia to North Africa.

The mortuary gifts from the graves were as follows:

STONE:

1. Cylindrical pestle of greenish stone, probably serpentine (fig. 6, 1). Length, 23.7 cm. Oval cross-section; one end is rounded, the other truncated; the sides are flattened, and well polished. From Grave No. 4.

2–5. Four conical abrading stones of river-worn pebbles, with well polished facets (fig. 6, 2–5). Sandstone and serpentine. Length, 4.5–6.2 cm. From Grave No. 6.

6. Flint arrowhead, almond-shaped (fig. 6, 6). Off-white in color. Cross-section slightly oval. Both surfaces completely chipped, with sharp edges. Length 3.5 cm. From Grave No. 6.
7. "Paddle" (fig. 6, 7). Flat oblong stone, wide flat blade with roughly fashioned handle; greenish metamorphic stone, blade naturally polished. Length, 25 cm. From Grave No. 9.

BONE, HORN, SHELL:

1. Tubular bone case (fig. 6, 8). Probably used as a needle-holder. Made from large bird bone. Length, 12.3 cm. From Grave No. 6.
2. Needle with round eyelet (fig. 6, 9). On one side is an incision crossing over the eye. Length, 6.5 cm. From Grave No. 6.
3. Needle with broken eye (fig. 6, 10). Length 5.2 cm. From Grave No. 11.
4. Perforated reindeer-horn punch or pendant (fig. 6, 11). Distal end fractured; in proximal end a cavity extending to the middle; on three sides near rim are three holes. Length, 14.5 cm. From Grave No. 6.
5. Bone awl (fig. 6, 12). Length 7.5 cm. From Grave No. 6.
6. Fragment of upper canine tooth of male deer (fig. 6, 13). From Grave No. 5.
7. Seventy sheep astragali. From Grave No. 3.
8. Necklaces made of several dozen *Corbicula fluminalis* shells. The apices of all the shells were polished and perforated.

COPPER:

1. Flat piece with rounded edges[14] bent in the middle into two almost symmetrical parts (fig. 6, 14; pl. XIX, 11). Probably a decoration or guard for the edge of a wooden vessel. The larger part was probably the exterior. It is adorned with rows of small bosses pressed out from the interior.

   On the surface edge are preserved four fragments of copper wire, which link both parts of the piece. The wires pass through holes in the exterior portion of the piece, and on the outside are flattened like nail tops.

   Length, 5 cm.; maximum distance between halves, 1 cm. From Grave No. 6.
2. Flat piece, slightly bent, with four small holes (fig. 6, 15). In one hole was a fragment of copper nail. Exterior bossed. Length, 9 cm. From Grave No. 6.
3. Similar fragment (fig. 6, 16), Length 4.1 cm. From Grave No. 6.
4. Narrow flat fragment, bent into two right angles (fig. 6, 17). From Grave No. 6.
5. Fragment of "nail," bent at right angles (fig. 6, 18). From Grave No. 6. This piece, and the preceding, were probably associated with Nos. 2 and 3.

POTTERY:[15]

In the Afanasiev culture graves were found two intact vessels, seven which could be completely repaired, and fourteen from which the shapes could be determined. This pottery is hand-made, coarse, reddish-yellow, breaking into irregular triangular or quadrangular pieces.

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[12] Teplouhov, 1927, p. 65, footnote 1.

[13] Animal bones: Domesticated cattle (*Bos taurus*, L.); sheep (*Ovis* Sp.); Wild ox (*Bos primigenius*, Boj.) or Bison (*Bison priscus*, Boj.) or the Yak (*Peophagus mutus*); Horse (*Equus caballus*, L.); Fox (*Vulpes vulpes*, L.); Deer (*Cervus aff. canadensis asiaticus*, Og.); Marmot (*Cittelus eversmanni*, Br.) and Striped Squirrel (*Eutamias asiaticus*, Gm.) are believed possibly to have dug their way into the graves and to have died subsequently.

[14] A fragment and a crude, tanged copper point were recovered by Kiselev; Kiselev, 1937a, p. 78 and pl. II, 2, 8.

[15] Teplouhov, 1927, pp. 70 ff.

Paste: Reddish-yellow to grey; gravel inclusions; friable.

Surface: Exterior reddish-yellow, rarely grey; in one example almost black.

Interior "dark in color," the surface covered with scraped furrows from the smoothing processs; typical of Afanasiev pottery.

Form:

1. Ovoid jar with pointed or rounded bottom, rim straight, everted, inverted, or slightly outrolled (fig. 7, 1–5). Height to 40 cm. Eighteen examples.

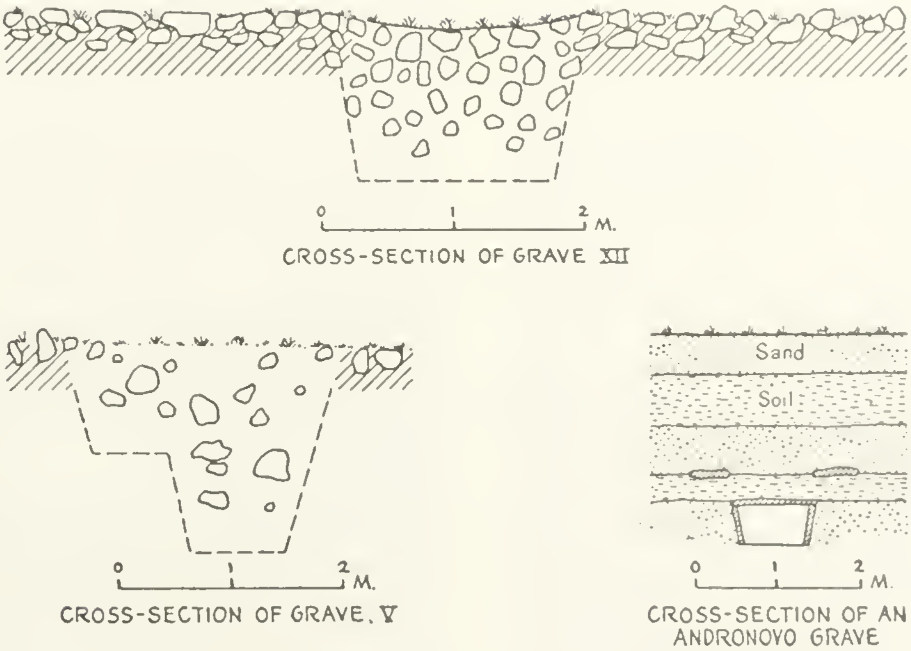
0
1
2 M.
CROSS-SECTION OF GRAVE XII
0
1
2 M.
CROSS-SECTION OF GRAVE. V
Sand
Soil
0
1
2 M.
CROSS-SECTION OF AN ANDRONOVO GRAVE

Fig. 5. Siberian grave sections.

2. "Amphora" (handleless) with pointed bottom and slightly outrolled rim (fig. 7, 6). This shape was not distinguished by Teplouhov from the preceding. One example, from Grave No. 9.
3. Flat-bottomed jar with slightly swelling sides and straight rim (fig. 7, 7). Two examples.
4. Pedestaled bowl with expanding sides (fig. 7, 9). Handle fragment on exterior; pedestal slightly concave. One example.

Decoration:

On the exterior: Incision and/or comb-impressions. Punctation; band fillets as well as embossing.

Design: Rows of punctation, alone or between parallel lines; incised lines in lattice pattern; short lines in herringbone pattern ("pine-tree").

The following is a detailed list of the pottery coming from the graves of the Afanasiev culture:

1. From Grave No. 2. Ovoid jar with pointed bottom (fig. 7, 1). Broken, height, 25 cm. Herringbone pattern covering entire exterior surface.
2. From Grave No. 3. Pedestaled bowl (fig. 7, 9; pl. XIX, 2). Slightly concave pedestal. On exterior near rim is trace of broken handle. Height of vessel 8.8 cm. Exterior surface decorated with rows of oblique incisions resembling oblique crescents. Oblique hatching on lip.
3. From Grave No. 3. Ovoid jar with pointed bottom (fig. 7, 2). Height 25 cm. Ridged lip, constricted neck, below constriction is horizontal band of tear-shaped indentations. Coarse lattice incisions on body.
4. From Grave No. 5. Potsherds of ovoid vessel.
5. From Grave No. 6. Flat-bottomed jar with slightly swelling sides, straight rim, flat lip (fig. 7, 7; pl. XIX, 3). Band of oblique triple punctations at rim. Row of bosses below, impressed from interior outwards, with paired oblique punctations between bosses. Field covered with rectangular cog-like impressions, also recurring on the base.

   Ovoid jar with pointed bottom (fig. 7, 4). Height 17 cm. Inverted rim bears two short bands of oblique incisions. Bands of incised lines filled with short incisions below.

   Several sherds of ovoid-bottomed jars, including two bottoms.
6. From Grave No. 7. Sherds of ovoid-bottomed jar.
7. From Grave No. 8. Flat-bottomed cup (fig. 7, 8).

Height 9.9 cm. Four raised (applied) ribs on exterior. Pit impressions as decoration. On exterior base are eight short rows of pits, radially divergent.

8. From Grave No. 9. Ovoid jar with pointed bottom (fig. 7, 3). Height 21.7 cm. Two raised applied bands at straight rim base, incised with short obliques. Comb decoration on body.

   Ovoid jar with rounded bottom (fig. 7, 5). Height 16.7 cm. Well-defined rim, slightly everted; lip hatched. Comb impressions on body.

   "Amphora" (fig. 7, 6). Height 33.1 cm. Outrolled neck with short incisions on lip and rim. Rare incised lines, usually horizontal, on body, occasionally crossing.
9. From Grave No. 11. Two ovoid jars with pointed bottom. Height 18.2 cm.
10. From Grave No. 14. Two sherds of large vessels with pointed bases. On one are rows of oblique impressions, possibly real or pseudo cord-marking.
11. From Grave No. 15. Sherd of ovoid jar with pointed bottom.
12. From Grave No. 16. Ovoid jar with pointed bottom. Height 15.9 cm. Poorly defined neck. Rows of short incisions as decoration.

This pottery from the Afanasiev graves must be considered as related to the north Eurasiatic *Kammkeramik Kreis*.[16] Similar wares are found in random camp sites along the Yenisei River. As illustrated in the *Realexikon der Vorgeschichte*, there is no difference between the Neolithic pottery described by Merhart and the Afanasiev wares. Merhart writes that one flower-pot-like pottery group (see our fig. 7) stands in a "certain" relation to Andronovo ware, the phase succeeding the Afanasiev complex.[17]

Anthropologically, the peoples of the Afanasiev culture were dolichocephalic, leptoprosopic, and leptorrhine.[18] Called Iranian by Teplouhov,[19] they are considered by Debets to be "European Dolichocephals, resembling Cro-Magnon," and to be comparable to (unspecified) Eneolithic skulls of south Russia.

Teplouhov, chiefly on the basis of the presence of the *Corbicula fluminalis* shells, believes the Afanasiev culture to have "developed under the influence of the Iranian world."[20] These shells are known in tertiary strata near Omsk, but are found living now only in the delta of the Amu Darya at the south end of the Aral Sea. The fossil specimens are plain, white, and calcined, an improbable source for ornaments. The fresh shells, however, are green on the exterior, and the interior is a pearly lilac. These fresh shells could be well-polished and easily perforated. Because of the present habitat of *Corbicula fluminalis*, Teplouhov considers that trade relations were operating between Siberia and Russian Turkestan, and that from the more southerly region metal, or at least the idea of using metal, penetrated to the Minusinsk Basin.

Teplouhov dates the Afanasiev culture only in the French resumé of the short 1929 text, at 2000 B.C.[21] Merhart, discussing the Siberian Neolithic (in which he derives the *Kammkeramik* from the west), which we have seen resembles the Afanasiev culture, writes that the earliest possible date is Montelius' III.[22] Nothing on the Yenisei precedes this complex. Most of the *Kammkeramik* he assigns to Montelius' IV, which is equatable to the Aunjetitz or Early Bronze Age of Central Europe,[23] now dated to 1700–1400 B.C. and later.[24]

On the middle Volga, Rau recognized[25] the extension of the Afanasiev culture complex to the Shaft-Grave group, many of which are contemporary with his Poltavka phase,[26] but which are usually considered to have preceded it (Poltavka = Khvalinsk A = Catacomb Graves). In 1929 Rau published an ovoid vessel of Afanasiev form found in a grave with a hammer-headed pin, assigning both to his Poltavka period.[27] Tallgren also reports a hammer-headed pin and ovoid pottery from Serogozy east of the Aral Sea.[28] Hammer-headed pins are characteristic of the Middle Kuban-Catacomb Graves period dated to 2100–1500,[29] and arrive in Denmark in Montelius' III C.[30] Thus, a date of 2000–1500 seems quite plausible for the Afanasiev culture. This date on the Iranian plateau is represented by Hissar III,[31] with which this culture has nothing in common.

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[16] Identical to that in Ailio, 1922, p. 67 and Abb. 22.

[17] Merhart, 1928, p. 63, no. 7, and pl. 7.

[18] Ten males, seven females were measured by Debets, 1932, 27 and 48; tables on pp. 36, 37.

[19] This type does occur in Iran. See Field, 1939, no. 1, p. 436.

[20] Teplouhov, 1929, p. 60.

[21] Teplouhov, 1929, p. 60.

[22] Merhart, 1928, p. 62.

[23] Childe, 1929, p. 115.

[24] Childe, 1939, p. 120.

[25] Rau, 1928, p. 22.

[26] Rau, 1928, pp. 19 ff.

[27] Rau, 1929, pp. 47–50.

[28] Tallgren, 1926, p. 52.

[29] Childe, 1939, p. 154, adapting Schmidt, 1929, p. 21 who postulated 2300–1600 B.C.

[30] Childe, 1929, p. 178.

The Afanasiev culture is represented by simple, stone-filled trench graves containing flexed burials. By European standards its cultural status is Neolithic. The pottery belongs to the general northern, Eurasiatic *Kammkeramik Kreis*, and the *Corbicula* shells and copper indicate to Teplouhov southern influences.

The type site is near Afanasiev mountain on the Yenisei. The culture is found in Bateni, near Saragash, and near Anash. Afanasiev sherds now in the Minusinsk Museum came also from Tes, Ust-Abakanskoje, Samodurovka, and Gorodchanskaja near Minsusinsk. A few sherds have been obtained near Krasnoyarsk, and that museum has more sherds of this culture from Osnachennoje, Vostochonje, and Lugovskoje villages, also in the Minusinsk Basin. Kiselev excavated twelve graves of this culture on the S'id'i River.

Evidence for the occurrence of the Afanasiev culture east of the Yenisei is lacking. Westward, Afanasiev type sherds have been found near Biisk and Barnaul on the upper Ob River. Similar sherds are in the Semipalatinsk Museum. Southward, Kiselev mentions the presence of this culture at Elekmanara in the north Altai Mountains.[32] Further west, it is found on the lower Volga[33] and on the Oka River east of Moscow near Mourom.[34]

Afanasiev culture, description of Graves and inventory, after Teplouhov:

Grave 1. Contiguous to Grave 2, surface stones covering both graves. Diameter of grave circle, 2.5 m.; depth, 1.0 m. Skeleton of one child, bones disturbed.

Grave 2. Diameter of grave circle, 5.0 m.; depth of grave, 1.5 m. Round grave pit, containing the lower portion of female skeleton, contracted, lying on right side; orientated to S.W. To left of skeleton was ovoid jar with pointed base.

Grave 3. Depth, 1.0 m. Round grave containing one male skeleton, contracted legs, lying on left side, orientated S.W. Ovoid jar with pointed base and pedestaled bowl as mortuary gifts on right side of skeleton near knees. Grave filled with 70 sheep astragali (domesticated sheep).

Grave 4. Diameter, 1.7×0.9 m.; depth, 1.5 m. Oval grave containing one male skeleton, contracted legs, lying on right side, orientated S.W. Stone pestle as mortuary gift on right side of skeleton under the knees.

Grave 5. Diameter of outer circle, 2.5 m. Oval pit grave with shelf at 1.1 m. depth. Grave mouth 2.4 m. diameter; depth 1.7 m., diameter of grave bottom, 0.8×0.4 m. On shelf lay leg bones, belonging to skeleton at depth 1.5 m., orientated S.W. At grave bottom was a skeleton, with arms and legs tightly flexed, lying on left side. One small sherd in the entire grave.

Grave 6. The most interesting and rich of the series. Diameter of outer circle, 5.6 m. at surface. Square grave pit, depth 1.4 m., containing four adults and one infant, all lying at the same level: Female skeleton in N.W., disturbed, orientated to the S.W., with bones red "painted;" infant lying at the right shoulder of this female; in N.E. part of grave two adult skeletons, contracted legs, orientated S.W., lying facing each other; in S.E. part of grave a fourth skeleton, lying in same position. Mortuary gifts occurred only around the "painted" skeleton. On the east side were sherds of six jars, one with a flat base, one with a round base, the others ovoid, pointed. Four stone abraders, bone needles and needle-case, and copper fragments completed the mortuary gifts.

Grave 7. Diameter, 0.8×1.5 m.; depth, 1.3 m. Square grave pit, containing a female skeleton at grave bottom, lying on right side, legs contracted, orientated S.W. To the right of this skeleton was an infant burial. Flat-bottomed cup to left of female (but this is listed as from Grave 8 in the pottery inventory).

Grave 8. Basal dimensions, 7.5×1.2 m.; depth, 1.3 m. Oval grave, containing skeleton lying on its back, orientated S.W. Stone arrowpoint opposite elbow near chest.

Grave 9. Outer diameter, 7.0 m. Rectangular grave pit, 1.7×2.4 m.; depth, 1.7 m. Disturbed skeletal bones from depth 0.35 to 0.70 m. Greenstone, flat "paddle" as mortuary gift. At grave base was male skeleton, lying on its back, orientated S.W., with contracted legs. Two ovoid jars on right side of skeleton near its elbow. "Amphora" on right side near its knees. Near the pottery were a few sheep and horse bones.

Grave 10. One infant bone.

Grave 11. Rectangular pit, 2×1.2 m., depth, 1.5 m. At 0.7 m. from the top were decayed bones, and a bone needle. On grave bottom were three skeletons, orientated S.W. Male skeleton lying on left side, on left side of grave; female skeleton lying on right side, on right side of pit, right hand of female joined to the left hand of the male. Near the female were the decayed bones of an infant. All burials were contracted. Mortuary gifts comprised two vessels, one with round base, one with pointed base.

Grave 12. Depth, 1.3 m. Human bones at 0.4 m. depth, and two skeletons at 0.7 m. Around necks were necklaces, and between legs were perforated shells, of *Corbicula fluminalis*. Male skeleton at base of grave, with goat (?) bones and some charcoal.

Grave 13. Outer stone-covered diameter 2.0 m. Oval grave pit, 1.5×1.0 m. depth, 0.70 m. Disturbed female burial, above which was a child's skeleton. Animal bones, including cattle and horse.

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[31] Schmidt, 1937, p. 325.

[32] Kiselev, 1937a, p. 93.

[33] Rau, 1928. p. 22.

[34] Zhukov, 1929, fig. 3.

Grave 14. Close to No. 15. Round grave pit, diameter, 2.0 m. At 0.2 m. depth was skeleton of a 12–14 year old boy, with contracted legs, lying on right side, orientated S.W. In S.E. part of grave were potsherds, cattle bones and charcoal.

Grave 15. Oval grave pit, diameter, 1.0×2.0 m., depth 5.20 m. Disturbed skeletons of male, three females, three children. One potsherd, fox and other small animal bones.

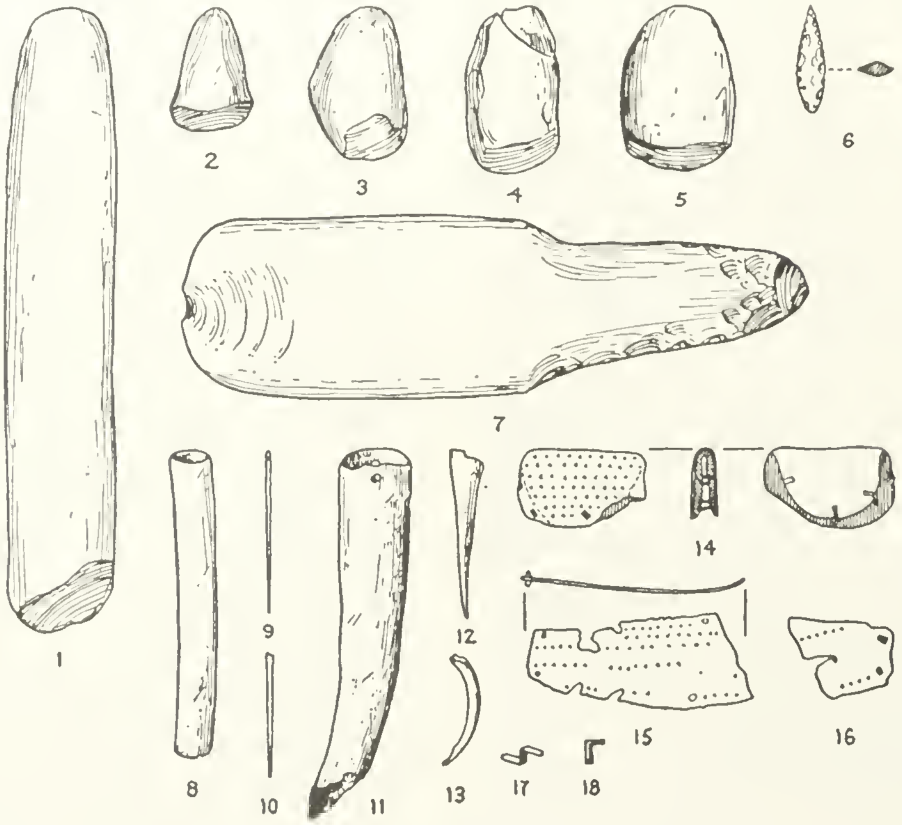

Fig. 6. Afanasiev grave artifacts.

Grave 16. Shallow, small pit, diameter 2.0 m. In center of grave, at 0.20 m., was infant skeleton, in seated position. Ovoid jar and bones of wild goat.

Grave 17. Round, diameter 1.0 m. Disturbed boy's skeleton at 0.70 m. depth.

Grave 18. Oval grave, length 3.50 m.; width, 2.70 m.; depth, 1.40 m. Disturbed human bones and bones of sheep.

B. THE ANDRONOVO CULTURE

In Teplouhov's classification, the culture succeeding the Afanasiev is termed Andronovo, after a village on the Achinsk-Minusinsk railroad. Four kilometers from Andronovo four graves were excavated on the left bank of the Serag River, three of which belonged to the same cultural phase.[35] These rectangular graves, orientated S.W.–N.E., were each enclosed within a circle of stone 35–40 feet in diameter. In the grave pit, at a depth of 2.5–3.0 m., were rectangular chambers, one of cut stones, the other two of wooden beams. In each chamber was a contracted burial, orientated S.W., lying on its left side. By the skull of each was a pottery vessel. Charcoal was found in one grave, and in another were a sheep's rib and a small flat copper fragment.

The complete inventory of the graves was five pottery vessels, one copper fragment, a barrel-shaped reddish paste bead, one wooden spoon fragment, pieces of wool cloth, and fragments of braided wool head covering. The pottery form was a shouldered bowl decorated with geometric, punctate patterns. Bases were flat and rims slightly everted (pl. XVI, 14, 17).

One kilometer from Bateni Teplouhov excavated five similar graves.[36] The burial chambers, made of wood or stone, possessed no preserved constructions above them. The stone

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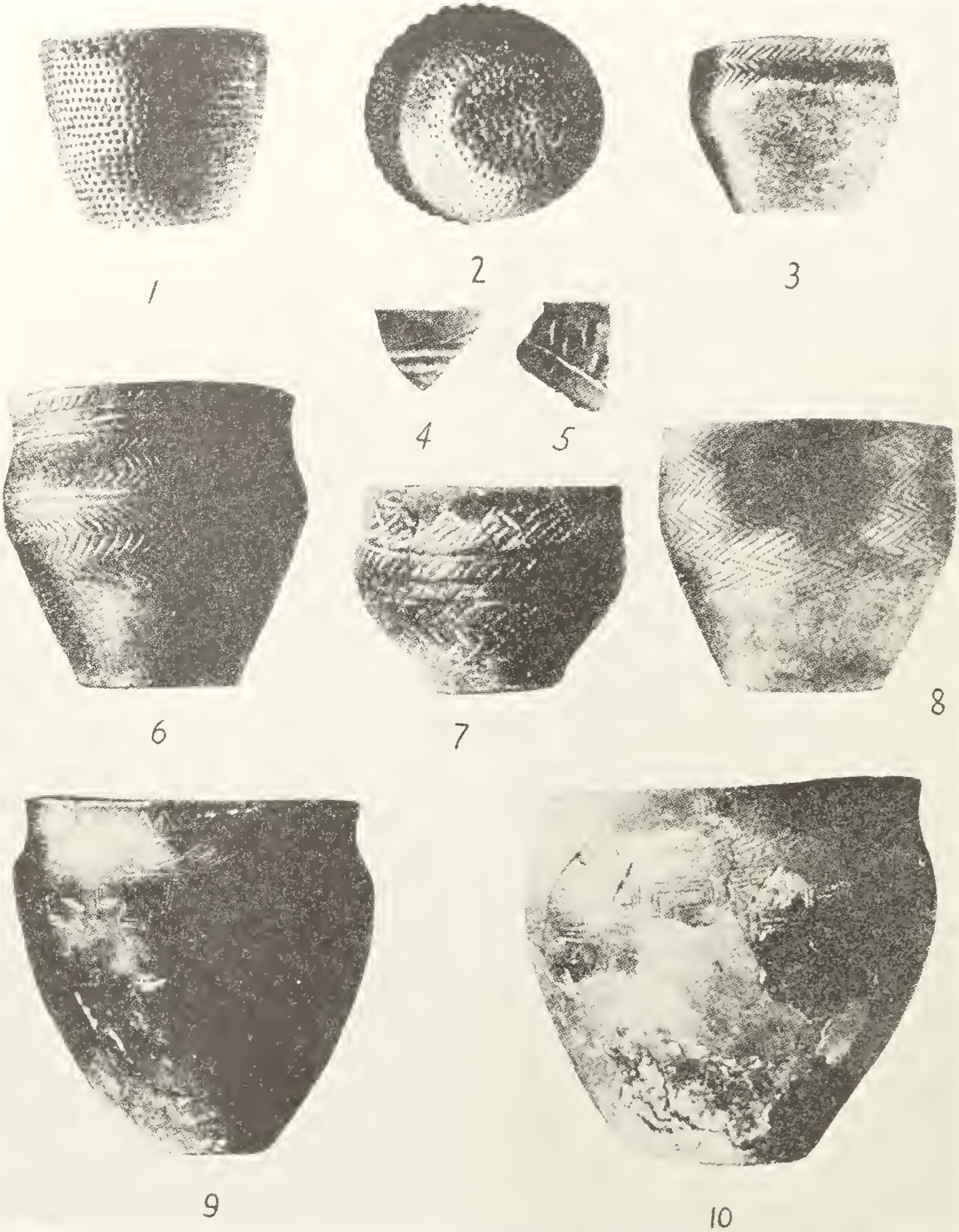
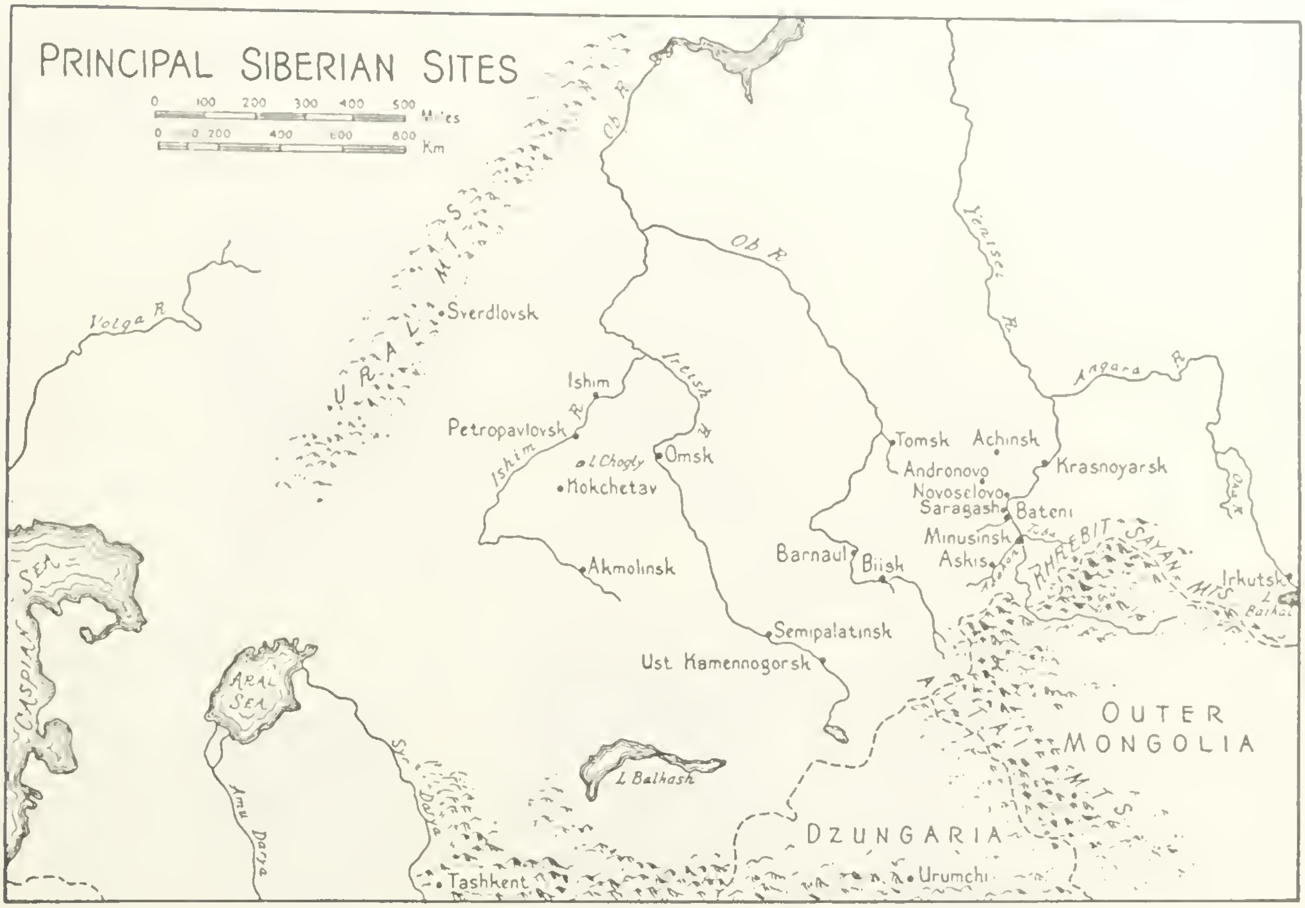
[35] Teplouhov, 1927, p. 80.

[36] Teplouhov, 1927, p. 70.



Andronovo pottery.



Map 8. Southwest Siberia, principal Siberian sites.

chambers (1.4×0.75×0.7 m. high, average) consisted of five rectangular slabs of sandstone, four serving as walls, the fifth the roof.

In each chamber was one skeleton, lying on its right side, orientated S.W. In the west corner of each chamber was one flat-bottomed vessel. On the bones of each skeleton copper oxide was observed. A large birch-bark ring was found in one grave, and a few fragments of charcoal.

The pottery consisted of conoids decorated with pitted designs on base and sides (pl. XV, 1, 2), and shouldered bowls with flat bases and slightly everted or straight rims, decorated with punctate, incised, or comb-marked patterns in geometric motifs, herringbones, triangles, etc. (pl. XV, 3, 6–8; XVI, 5).

Two kilometers south of Novoselovo, on the left bank of the Yenisei, Teplouhov dug three graves of this same manifestation.[37] A fence of cut stones surrounded one of the graves. One grave chamber composed of five slabs lay under several layers of alternate sand and soil, revealed by erosion of the fluvial terrace (fig. 5, 3). On the lowest soil level were horizontally placed cut stones, which had originally served as the grave enclosure.

The funeral chamber (0.5×0.3×0.38 m. high) of a third grave contained an infant skeleton, orientated N.E. In the east corner was a shouldered bowl with herringbone pattern at the rim (pl. XV, 3)[38] similar to the ornament on a Bateni bowl (pl. XV, 8).

A second chamber or cist, also made of five cut stones, contained a child's skeleton, gazelle astragali (*Gazella subgutturosa*), and a shouldered jar bearing herringbone patterns and horizontal incised lines (pl. XV, 6). A third cist, which had been destroyed, yielded sherds from two vessels, one bearing incised decoration (pl. XV, 5), the other hatched incised triangles (pl. XV, 4). The human bones in these graves were sprinkled with copper oxide.[39]

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[37] Teplouhov, 1927, pp. 77–78.

[38] Pl. XV, 3 is listed for both Bateni and Teplouhov, 1927, p. 77.

[39] Teplouhov, 1927, p. 78.

Two stone cists enclosing contracted burials were excavated by Ermolajev on this terrace in 1913. The mortuary gifts from these graves included two pots, a conoid (pl. XVI, 3) and shouldered jar (pl. XVI, 12), a copper band, and a smooth "white metal" (silver?) small ring with unjoined ends, 13 cm. in diameter. Ermolajev recovered another shouldered jar (pl. XVI, 9) in a destroyed grave chamber buttressed with wood. A fourth, conoid vessel (pl. XVI, 2) was found with the human bones. These vessels were presented to the Krasnoyarsk Museum, while the Minusinsk Museum possesses five from this same terrace (pl. XVI, 1). Human bones and stone arrowpoints are reported to have been with these vessels.

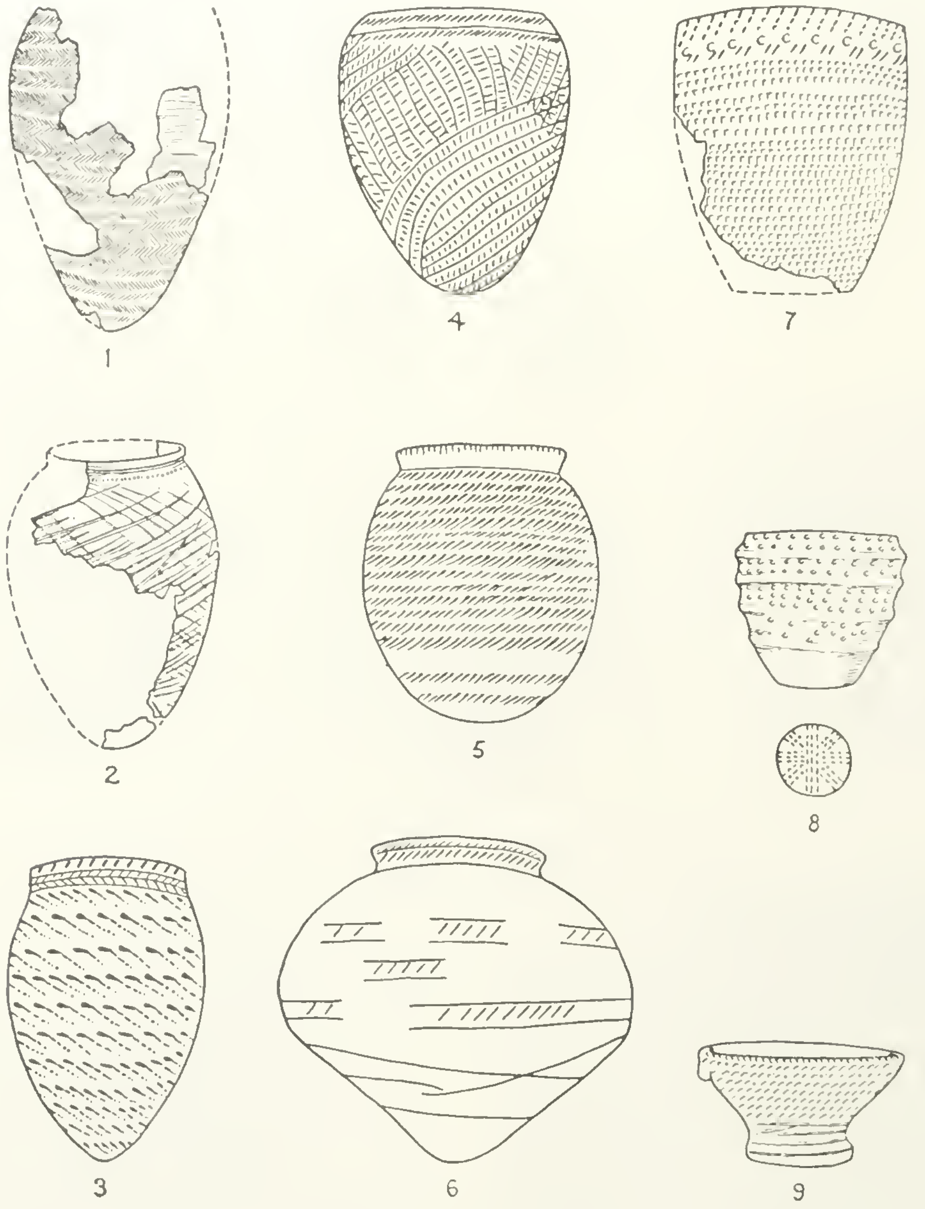

Fig. 7. Afanasiev pottery.

The Krasnoyarsk Museum has ten intact vessels and eleven large sherds from Bovoselovo[40] (pl. XVIII, 4, 6–8, 10, 11), which in form and ornament are similar to those from Bateni. Andronovo vessels now in the Minusinsk Museum also come from Tesinskogo, Ulazi, Znamenka, and Samodurovka (all villages in the Minusinsk district), and Tagarskogo Island in the Yenisei.[41]

Teplouhov has attributed to the Andronovo culture two vessels in the Minusinsk Museum from Mount Isikh (pl. XVI, 18, 19).[42] The form of the shouldered jar (p. XVI, 18) is similar to Andronovo ceramics, though more slender and more sharply defined. It is decorated with horizontal rows of small X's and a row of hatching. Vessel no. 19, however, is a two-handled biconoid, with a slightly expanded base and rim. Its decoration is similar to the preceding. But the form of this "urn" is like no other Andronovo pottery which has been illustrated. Its attribution to the Andronovo complex must remain doubtful.

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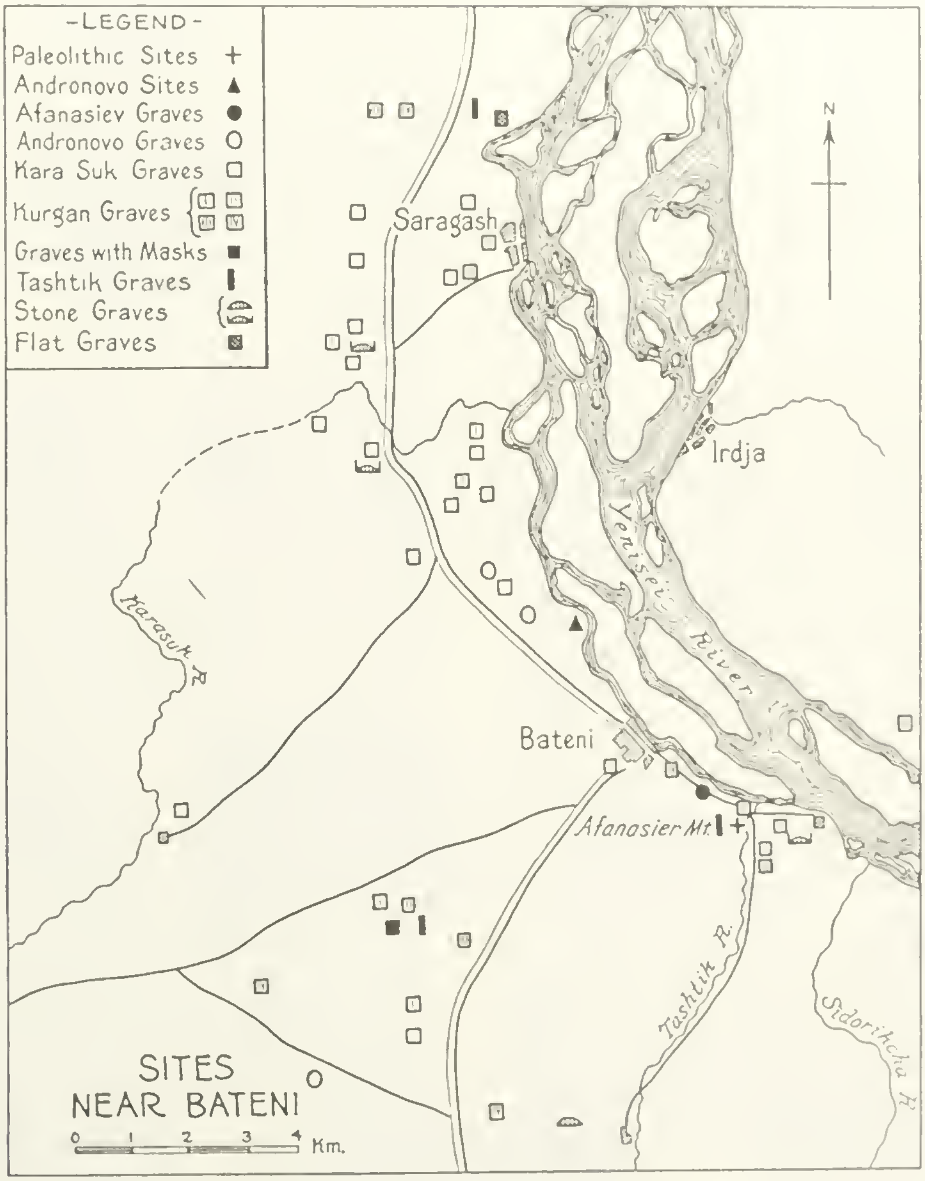
[40] Teplouhov, 1927, p. 78.

[41] Teplouhov, 1927, p. 83.



Map 9. Sites near Bateni, Yenisei Valley.

Summarily, the Andronovo culture, as manifested in the Minusinsk-Achinsk-Krasnoyarsk triangle, is known only from rectangular graves, enclosed in a stone circle some 35–40 feet in diameter. In the rectangular grave pit is a chamber usually made of four stone slabs with a fifth cap-stone. Occasionally, wooden beams, unjoined, unbonded, may replace the stone slabs. In the chamber, which is two to three meters below the ground surface, is a flexed burial, orientated to the S.W. The chamber itself has its long axis S.W.-N.E.

The complete inventory of material from these graves was as follows:

[42] Teplouhov, 1927, p. 81.

Stone:
- Arrowpoints, reported from the Bateni terrace.
- Flint scraper, same.
- Stone pulverizer, same.

Food, etc.:
- Sheep (one rib); gazelle astragali (*Gazella subgutturosa*); charcoal.

Ornaments, etc.:
- "Paste" barrel-shaped, brick red beads.
- Cloth: Fragments of wool cloth; headdress fragments, made of circles of braided wood (each ribbon 4 cm., wide) sewn together at edges, flap, like an ear-cover, sewn on one side.
- Wood: Large birch-bark ring; rough spoon, handle perpendicular to scoop; of willow.

Metal:
- Copper: Flat fragment, 32×13 mm.; circular band, as forehead adornment. Oxide traces on many skeletons.
- Silver (?): Small smooth ring, with unjoined ends, diameter 13 mm., of "white" metal.

Pottery:

Andronovo pottery, like that of the Afanasiev phase, belongs to the general northern group of hand-made wares, presumably grit-tempered, crumbly, presumably fired at low temperature, generally blackish to brown in color. There are two characteristic forms:

1. Flat based jar with slightly swelling sides ("conoid") and straight rim (pl. XV, 1–3; pl. XVI, 1–2).
   - Decoration: Punctation, pitting, embossing (by pressing outwards from the interior), comb-end impressions.
   - Design: Horizontal rows of bosses, pits, and zigzag punctations.
2. Shouldered bowl with flat base, and slightly concave to straight rim (pl. XV, 6–10; pl. XVI, 4–23).[43]
   - Decoration: Punctation or comb-teeth impression, incising, pitting.
   - Design: Bands of punctated zigzags, punctated hatched triangles, meanders and frets; incised or "combed" herringbone bands. Usually in bands from rim to shoulder; sometimes also a basal band; infrequently over the entire exterior surface, which is considered by Teplouhov to be a more primitive pattern.[44]

Teplouhov relates the Andronovo grave culture to the preceding Afanasiev phase by the flexed burials orientated S.W., and by the flat base conoid. Pl. XVI, 2 is identical with fig. 7, 7 of the Afanasiev group, but the Andronovo pot was not excavated, and thus certainly allocated, by Teplouhov, but was brought by Ermolajev to the Krasnoyarsk Museum in 1913 from Bateni, there found in a disturbed grave "among bones."[45] Pl. XVI, 1 is accredited with coming from the same terrace at Bateni but otherwise has no documentation. Pl. XVI, 3 was gotten by Ermolajev at Bateni. Teplouhov found one conoid, pl. XV, 1, 2, at Bateni though he does not specify from which grave it came.[46] There should then be some reserve in the acceptance of the conoid vessel form as a connecting link of the two grave groups.

The metal finds, the wood, the wool, etc., are not illustrated. But "the constant presence of copper oxide, presumably from corroded ornaments, would indicate that copper offerings were more widespread at this time than during the Afanasiev period."[47] This comment should be open to criticism. Teplouhov writes *okisi medi*, or copper oxide, but the prevalent oxide found in such graves in Russia and eastern Europe is iron oxide or ochre. Is not the oxide in question iron, and the absence of copper offerings explicable by the general poverty of this group in the Yenisei Valley?

West of the Yenisei this culture is richer. Kamenskii in 1910 excavated ten graves at Maloi-Koitas, a site on the Kizil Su River 80 km. from Semipalatinsk en route to Ust-Kamenogorsk. These graves Teplouhov has arranged as two types.[48] The first consisted of a trench grave enclosing a stone cist, under a low mound enclosed within a rectangular fence of vertically placed stones which protruded slightly above the ground. The enclosed area was covered with stones. *Mogil* 1 contained a disturbed skeleton, copper earrings and Andronovo type pottery. The earrings were gold-plated,[49] circular, made by inserting the small end into a flared funnel-like terminal (pl. XIX, 27).[50]

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[43] For pl. XVI, 19, from Mount Isikh, see above.

[44] Teplouhov, 1927, p. 83.

[45] Teplouhov, 1927, p. 78.

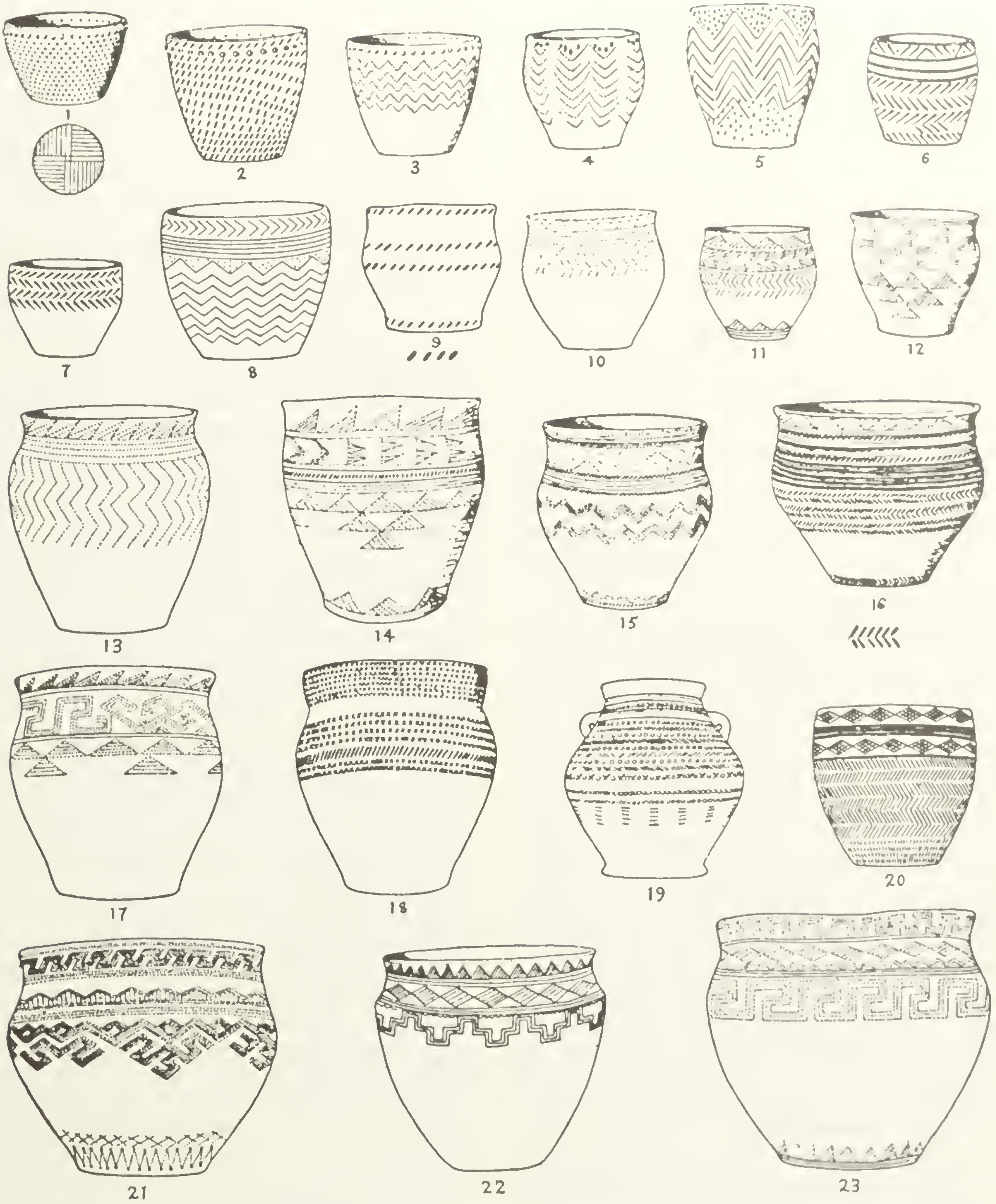
[46] Teplouhov, 1927, p. 77.

[47] Teplouhov, 1927, p. 83.

[48] Teplouhov, 1927, p. 86.

[49] Gold ornaments begin in the Andronovo period, attaining maximum use in the Scythian period. The principal deposits in Siberia occur in a large belt from the northern Urals south and east to Kazakstan, the Altai foothills, and across the Siberian taiga to Lake Baikal, and thence northeast into the Yakutsk Republic and to the Pacific. In the region here under discussion it is found around Kokchetav and Kolbinsk, northeast of Lake Balkash, on the Ters-Airiku, on the Kaldzhiru, Kurchumu and Buktarme, on the Shul'be near Berezov in the Urals and in the Smeinogorsk mining area, Shipman, 1938, p. 105; Griaznov, 1935, p. 192.

[50] These objects are not illustrated in the 1927 text but are described and illustrated as typical Andronovo objects in 1929, pp. 43 and 60, and pl. I, section II. Teplouhov 1929, pl. I is repeated as pl. X.



Andronovo pottery.

The second grave (*mogil* 3) included in its mortuary gifts four copper cones of spirally curved wire (pl. XIX, 28);[51] two spirals of gold-plated copper (pl. XIX, 24); two pediform gold-plated copper ornaments decorated with hatched triangles and bosses separated by deep indentations (pl. XIX, 23); and a copper, gold-plated rhomboidal flat plaque, decorated with parallel hatchings in each quarter. An embossed piece was recovered, six convex copper disks (pl. XIX, 26), two copper buttons, and one pottery vessel.

The third grave (*mogil* 4) contained an earring like pl. XIX, 27; the fourth grave (*mogil* 8) included in its mortuary gifts two short, gold-plated spirals, two perforated wolf canines, perforated shells, a perforated triangular bone pendant, a perforated oval slate pendant, and two Andronovo type pottery vessels. In the fifth grave (9th in Teplouhov's listing) were found an earring similar to those in the first and third graves, a copper dagger with flat handle widening slightly in the middle and gradually thinning to the blade (see pl. XIX, 20), and many potsherds with "typical geometric punctate decoration."[52]

The second grave type at Maloi Koitas was without a mound and was enclosed in a circular stone fence. The trench contained a stone cist. Two graves are reported, containing sherds and one almost complete vessel, copper disks, and a copper bead.

Kamenskii also excavated two graves of the Andronovo culture at Kara-Uzok (16 km. from Ust Kameogorsk).[53] They were covered with barrows and surrounded with either circular or square stone fences. In the first grave was a typical Andronovo vessel. But the second contained a cremated burial and no cist. Certainly, the attribution of this grave to the Andronovo group is doubtful (by lack of mortuary gifts and a different burial tradition), though this burial seems to be the basis for Teplouhov's statement, "cremation is met with as an exception," in the 1929 résumé.[54]

As well as the above graves, Kamenskii further excavated two graves at Karadzhala which Teplouhov attributes to the Andronovo period.[55]

The pottery from Maloi Koitas, Kara-Uzok, and Karadzhala, all some 500 miles west of the Minusinsk Basin, is "completely analogous to the Andronovo ware in shape and decoration."[55] Pl. XVI, 13 illustrates a shouldered jar from Maloi Koitas. The form is slightly accentuated, but the design elements are typical. Teplouhov reports that even the complicated designs found on some of the Minusinsk pottery are to be found on this Semipalatinsk-Ubinskaya province ware, indicating the "homogeneity of art, technical methods, and probably the entire culture of this period, which is spread not only in the Minusinsk district but also in the Kirgiz region and in western Siberia."[55]

Further west, Argentovskii excavated eight tumuli in the Petropavlovsk region. Covered with gently sloping mounds a meter in height, the trench graves contained mortuary gifts similar to those of the extended Andronovo culture; near the flexed skeletons were found beads of blue and white clay, tooth pendants, convex disks, a pin (not described), a spiral-ended bracelet (?) fragment, and Andronovo type pottery. On the vessels are several new design elements, including punctated triangles with pits at the apex (pl. XVI, 21) and punctate crosses near the base. Pl. XVI, 20 bears cross-hatched, linked diamonds around the rim.

Heikel[56] illustrates Andronovo pottery from the Tobol River, a tributary of the Irtish. More recently, Tallgren reported excavations of an Andronovo town site and over 100 graves on the Tobol at Alexeyevka village (in Kazakstan in the southern Urals).[57] At Gorbunovo in the Urals, Tallgren has also reported a "littoral dwelling place" in peat bogs, "probably dating from the Andronovo period."[58] The Russian hydro-electric commission's expedition has lately published[59] a series of Andronovo and some Kara Suk graves, from near Karaganda on the upper Ishim (Kazakstan). The pottery types from the Andronovo graves included typical wares and a "bell-beaker" form (like the west European), and a pedestaled bowl.[60] Another

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[51] These probably are the spirally coiled ends of bracelets; see Krivtsov-Grakov, 1929, p. 120, fig. 10.

[52] Teplouhov, 1927, p. 86.

[53] Teplouhov, 1927, p. 87.

[54] Teplouhov, 1929, p. 60.

[55] Teplouhov, 1927, p. 87.

[56] Heikel, 1894, pl. XXIX.

[57] Tallgren, 1937a, p. 44.

[58] Tallgren, 1936, p. 163.

[59] *Arheologicheskie Rabot'i Akademii na Novostroikah v* 1932–1933 gg. II, Moscow, 1935, *GAIMK*, No. 110. Various authors.

[60] Rykov, 1935 (in *GAIMK*, 110), pp. 45 ff., and fig. 21–25, 13, 14.

Andronovo site is reported on the Yenisei by Sosnovskiĭ.[61]

In the Kustanai Museum are Andronovo vessels from the Kin-Aral district.[62] Tolmachev excavated an Andronovo grave near Balaklanska village on the Miasu River.[63] Two graves, part of a cemetery extending over half a square kilometer on the right bank of the Ishim, were discovered by Preobrazhenskii opposite Efimoka village in the Kokchetav district.[64] From here, and from a flexed burial on the Chaglinka River, 18 km. from Kokchetav, south of Petropavlov, came typical Andronovo ware (pl. XVI, 22 and 23 from Efirmovka).

Radlov[65] classified many burial mounds in his journeys through Siberia, his Group Five now being assigned by Teplouhov to the Andronovo culture: round flat graves set within a circle of stones 35–40 feet in diameter, the stones hardly visible above ground. Radlov is reported to have seen only a few of these graves on the Akabansk steppe, but to have noted them frequently in the Altai mountains, and along the Irtish between Sergiopol and Semipalatinsk.

Kuznetzov is reported to have Andronovo graves near Tomsk.[66] Possible Andronovo graves are likewise cited from Kirgiz tribe campsites between Petropavlovsk and Kokchetav, on the Tatimbek River near Akmolinsk, at an unspecified site 50 km. north of Omsk, and in the Ural River basin.[66] The Leningrad University Museum has Andronovo sherds from Lake Sari-Bulak in the Semipalatinsk district, and Andronovo ware is further reported from the Altai region.[67]

The Andronovo culture is summarized thus by Teplouhov. The typical trench grave occurs under a low round barrow, surrounded frequently by a stone fence. The flexed burial, on its side and orientated S.W., lies usually in a stone or wood chamber. The typical element of the grave inventory is the pottery, other objects being infrequent. The culture is more fully represented in the cemeteries of western Siberia and the Kirgiz district than it is in the Minusinsk Basin. "Evidently, western Asia was the center of diffusion of the Andronovo culture, and the Minusinsk district is its eastern limit. . . . The Seima culture exhibits many elements (*viz.*, hatched triangles and diamonds on spearheads and celts) which are similar to the designs on Andronovo pottery, and they can be classified in its inventory. Despite the fact that the elements of the Seima culture are different from the Andronovo, it is possible to consider these cultures as synchronous. Andronovo ceramics are said to resemble those of "western Europe" in shape and ornament. "This is interesting, for the Andronovo culture is, evidently, synchronous with them."[68]

A stated resemblance to western European ceramics is meaningless without specification of the group in question. And, certainly, the typological comparison of geometric ornament on stray objects attributed to the Andronovo culture, to the metal-rich Late Bronze Age Seima hoard, is so tenuous as to be valueless.[69]

A short résumé of the Andronovo culture is given in Teplouhov's 1929 publication.[70] Included as typical objects are the richer mortuary gifts of the region west of the Minusinsk Basin. They are illustrated in pl. XIX, but not allocated to site. No. 13 (=pl. XV, 1) is the conoid found by Ermolajev at Bateni. No. 18 (=pl. XVI, 17) is a shouldered jar excavated by Tugarin at Andronovo. Decorated pottery saucers, sometimes with handles, are said to have been found in some Andronovo graves. These are not mentioned in the fuller 1927 version.

Stone scrapers and arrowpoints are illustrated in pl. XIX, 29, 30. The arrowpoints are flat and triangular in shape. The stone pestle, No. 31, is round in cross-section.

The copper daggers from Maloi Koitas are shown in pl. XIX, 20. Nos. 12 and 14 are copper beads from Maloi Koitas and Efimovka. The paste beads are figured in pl. XIX, 15–17. No. 19 is a carnelian bead, not mentioned in 1927. No. 25 illustrates fragments of a copper bracelet. The funnel-ended circular earrings from Maloi Koitas are pictured in pl. XIX, 27, the copper disks in No. 26, the compact conic spirals in No. 28. No. 22 represents the double-spiral ornament from Petropavlov or Maloi Koitas. Short spiral lock-rings, of copper, are figured in pl. XIX, 24. No. 23 is the gold-plated "pediform" decorated with hatchings and embossings, found at Maloi Koitas. The socketed celt in No. 21 is not mentioned in 1927, but Teplouhov's postulated analogies of the Andronovo culture to the Seima group may be the reason for its inclusion here. Probably, however, this is a "Krasnoyarsk" celt, a western import attributable to the Minusinsk Kurgan I period of the Full Bronze Age.[71]

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[61] Sosnovskiĭ, 1935, p. 73. Unfortunately, the finds from various "Neolithic" and "Bronze Age" sites along the Angara, Yenisei, Bii, and Irtish are not described.

[62] Teplouhov, 1927, p. 87.

[63] Teplouhov, 1927, p. 88.

[64] Teplouhov, 1927, p. 89.

[65] Radlov, 1893; Teplouhov, 1927, p. 89.

[66] Teplouhov, 1927, p. 89.

[67] Teplouhov, 1927, p. 89.

[68] Teplouhov, 1927, p. 89.

[69] For Seima see Tallgren, 1926, pp. 137 ff.; and below, where the Kara Suk culture is compared to the Fatyanovo group, and in turn to the Seima "culture."

[70] Teplouhov, 1929, pp. 43, 60.

Dog burials are reported in the 1929 Russian and French texts.[72] These burials were not discussed in the 1927 publication.

The human population in Andronovo times, as revealed by 23 male, 11 female skulls from Andronovo graves, diverged somewhat from the Afanasiev group. Debets[73] reports them to be mesocephalic Europoids,[74] coming from the steppes of modern Kazakstan, and to be similar to the Lake Baikal Neolithic people.

The Andronovo culture extends from the Yenisei-Altai region westwards to the Urals and beyond to the middle Volga, to the analogous Khavalinsk culture, Phase B of Rykov, as reported by Rau.[75] In this group similar pottery, spiral-ended bracelets, and hairlocks recur. Despite chronological difficulties, Rykov gave a date of 1300–1000 B.C. for Khavalinsk Phase B. Rau attempts no dating.

In Siberia, Teplouhov dated the Andronovo culture to 1500 B.C.,[76] but without references or obvious reasons. Tallgren, who considers the center of the Andronovo culture to have been in the southern Urals, put its date at 1300–900.[77] In his article on "Portable Altars" he assigns a date of 1200–800;[78] elsewhere, a date of 1400–1000;[79] in 1938, a date of 1300–800.[80] In 1936 he reported an Andronovo site at Gorbunovo on the Ob, east of the Urals, dating it then to about 1200–1000 B.C.[81] These dates are all undocumented, but despite their variance, are important for approximating a time-placement of this cultural phase. The dates presumably are based[82] on Tallgren's *La Pontide Préscythique*, written (in 1926) before the re-excavation of Troy and the more recent work in the Near East and Aegean regions. The major difficulty in dating the Andronovo (grave) culture is the lack of excavated dwelling sites. Until such appear, dated by stratigraphy and climatic changes,[83] the proffered time-span of this culture, between 1500 and 1000 or 800 B.C., may as well be used.

C. THE KARA SUK CULTURE

Succeeding the Andronovo culture in Teplouhov's classification is the Kara Suk culture, twelve disturbed graves of which were excavated by Teplouhov on the same Bateni terrace where he had unearthed the Andronovo burials. At the north edge of this terrace the eponymous Kara Suk flows into the Yenisei River. On the left bank of this stream Teplouhov exposed thirteen more graves of this manifestation, and thirteen more at its headwaters.[84]

These 38 graves lay within rectangular or circular enclosures of sandstone slabs some four centimeters thick. Fourteen of the graves were within circular enclosures (average diameter, 8 m.), the stones of which lay flat on the ground. The remaining 24 burials were within rectangular fences of stones set end-wise (pl. XIX), the length of the fence varying between two to eight meters, usually between four and five. Frequently the grave enclosures were contiguous, in which case the central grave, which, according to Teplouhov, usually contained the more archaic pottery, was a round enclosure, and the adjoining grave areas were rectangular. The circular enclosures were similar to those of the Andronovo group.

Inside the fence occurred a low mound, rising to half a meter. Beneath the mound was the grave, delimited by stone slabs which protruded above the ground surface. The stone-slabbed rectangular trench, 2×1×1 m. deep, had a roofing of

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[71] Merhart, 1926, pp. 40 ff.; 66–68.

[72] Teplouhov, 1929, pp. 43, 60.

[73] Debets, 1932, p. 48.

[74] Coon, 1939, p. 169, though considering all the Minusinsk-Yenisei crania in one cultural category, also writes: "The participants in this Bronze Age were men of European racial type."

[75] Rau, 1928, pp. 4, 26.

[76] Teplouhov, 1929, p. 60.

[77] Tallgren, 1937a, p. 43. Merhart, 1926, p. 26, postulates the region north of the Sea of Azov to have been the area of origin.

[78] Tallgren, 1937b, p. 52.

[79] Tallgren, 1937d, pp. 105–106.

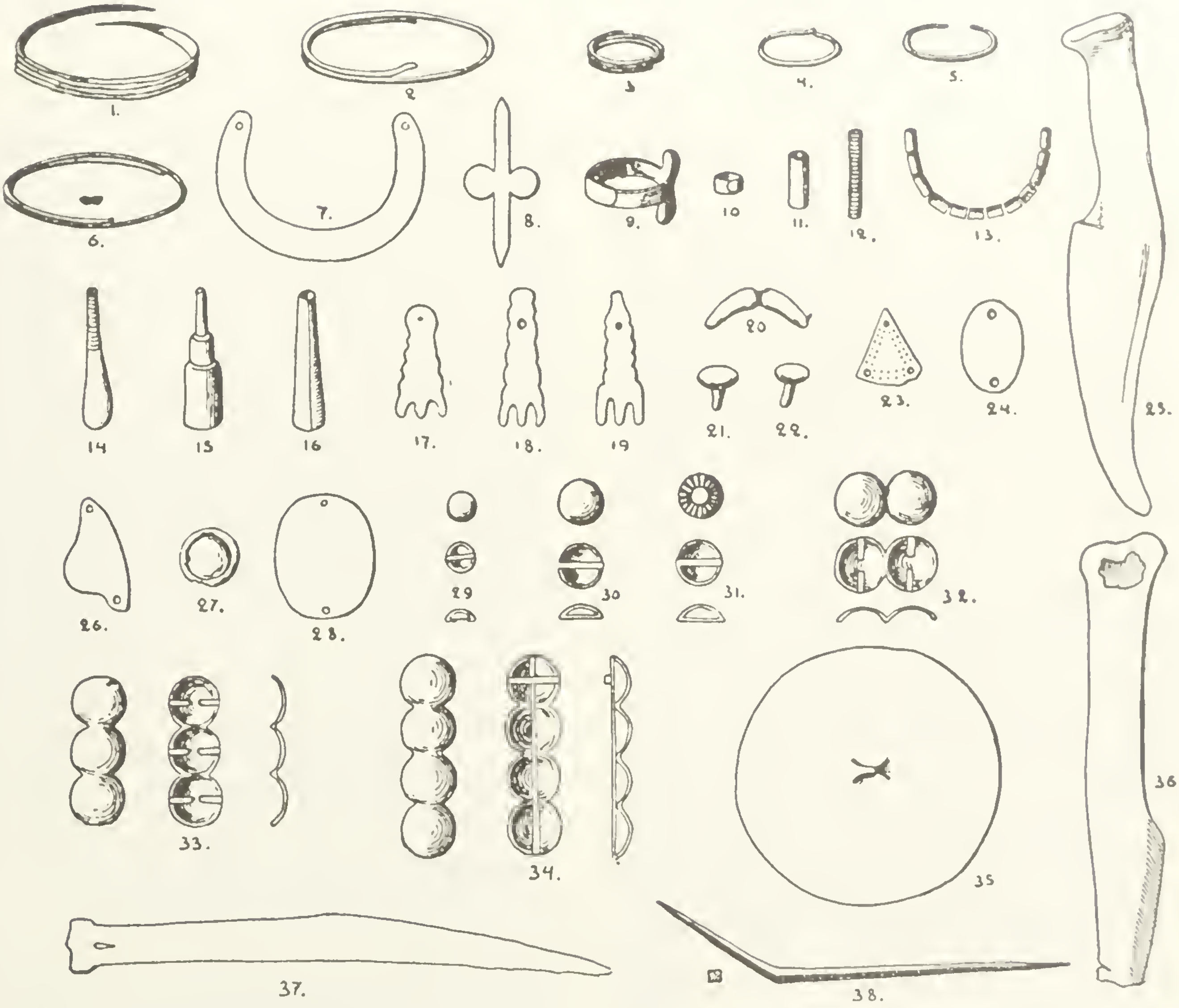
[80] Tallgren, 1938, p. 116.

[81] Tallgren, 1936, p. 163.

[82] Tallgren, 1937d, p. 105.

[83] On recent attempts to utilize what is known of ancient Siberian climate, see Fisher, 1935, and Richardson, 1937.

[84] Teplouhov, 1927, p. 91.



KARA SUK METAL OBJECTS.

slabs. The head end of the grave might be up to 20 cm. wider, 10 cm. higher, than the foot end. The graves were orientated N.E.–S.W., the head end in 35 cases being to the northeast. The sides of the enclosing fence, when rectangular, paralleled the grave walls, so that the corners of the enclosures and graves were to the cardinal points. Not all graves and enclosures, however, were orientated in the same direction.[85]

A characteristic position of interment was not observed. In two graves the skeletons lay on their sides; in two they lay on their backs, head orientated N.E. But usually the skeletons had been disturbed and were incomplete. Occasionally, several burials occurred in one grave. Teplouhov believed that the frozen winter ground prohibited burials save in the short summer, and that at that time the bones of those who died during the cold months were collected and interred in these graves. This would account for these "secondary" burials.

Some of the Kara Suk graves were barren. Twenty-five contained the following mortuary gifts.[86]

FOOD, ETC.:
- Cattle leg bones; one cattle mandible.
- Sheep or goat bones.
- Deer and bird bones; egg shells.

BEADS:
- Copper, small, circular, perforated.
- Bone paste, cylindrical (pl. XVII, 13).

BRONZE:
- Hemispheroid button-shaped convex disk, five times larger than pl. XVII, 30.
- Circular rings, large and small, ends open or overlapped (pl. XVII, 2–6).
- Finger rings (found on finger bones) and lock-rings (found on both sides of skull).
- Fragments of long flat object similar to pl. XVII, 7, from Chita.
- Two awls (pins), rectangular in section (pl. XVII, 38).

POTTERY:
- From twenty of the thirty-eight graves some twenty-four handmade vessels and fragments were obtained.
- Paste: Well levigated, with few gravel inclusions.
- Form: Round-bottomed open jar with straight rim (pl. XVIII, 3–6).
- Surface: Exterior well smoothed, sometimes slipped, burnished. Color grey (after Kiselev, 1937, p. 142).
- Decoration: Plain ware, undecorated. Incised, or dragged combing. Pitting.
- Design: Hatched lines and hatched checker designs on taller jars, confined to rim; horizontal incised lines at neck.
- Designs on squatter bowls usually from shoulder down; hatched units within large hanging triangle (pl. XVIII, 16), and hatched horizontal zigzag bands
- Variants: One undecorated bowl was red-slipped (pl. XVIII, 31). Some incised ware was white filled (also reported by Kiselev, 1937, pp. 157, 159).

Kara Suk culture characteristics thus are stone-slabbed graves orientated N.E.–S.W., enclosed in rectangular or circular stone fences. Typical mortuary gifts included spiral rings of bronze wire, awls, and globular round-bottomed jars. Debets found the Kara Suk people (19 males, 20 females) physically to have been mesobrachycephals, with a long and narrow face, comparable, reportedly, to Black's prehistoric Chinese crania.[87]

Teplouhov considered that the fifteen graves excavated by Kusnetzov-Krasnoyarskii (in 1884) near Askis were of the Kara Suk type.[88] They were stone cists, similar in size to the Kara Suk (2×1×0.75 m. high), the roofing slabs lying just under the ground surface. The enclosures of these graves, frequently square, were between four and eight meters in length. In the graves were disturbed skeletons, some orientated to the west, lying in a flexed position on the left side. Near two of the graves were small cubical holes in the ground, each 50 cm. on a side, containing bronze objects, ashes, and pottery. Kusneztov considered them to be sacrificial pits. Teplouhov thought them children's graves in which the skeletons had decayed.

The grave contents, other than sheep and cattle bones present, consisted of:

BRONZE:
- Six pairs of wire rings (pl. XVII, 4, 5).
- One ring, overlapped ends, with bilobed signet, like pl. XVII, 9.
- Two rings, same shape, but unbent (pl. XVII, 10).
- Doubly and triply bossed plaques, with clamps below (pl. XVII, 32, 33).
- Hollow tubes (pl. XVII, 14, 15).
- Nail heads (pl. XVII, 21).
- Three flat plaque pendants of various form (pl. XVII, 23, 24, 26).
- Band bracelet with horizontal line decoration (pl. XVII, 1).

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[85] Kiselev, 1937b, pp. 140–141, 146, 153–154;

[86] Teplouhov, 1927, p. 95.

[87] Debets, 1932, pp. 31, 48; Black, 1928.

[88] Teplouhov, 1927, p. 98.

POTTERY:

- Globular round-bottomed jar (pl. XVIII, 8). Interrupted single band of chevrons.
- Small squat, globular round-bottomed jar with punctate decoration (pl. XVIII, 9).
- Flat-bottomed spheroid jar with narrow neck, no decoration (pl. XVIII, 36).
- Sherds of two round-bottomed jars (pl. XVIII, 28, 29) with designs resembling those of two round-bottomed jars (pl. XVIII, 26, 27) from Krivaya.

In 1894 Adrianov excavated some graves along the Tuba River, on Tagarskogo Island in the Yenisei, and near Lake Tagarskogo.[89] Tumulus No. 40 on the island was a Kara Suk burial on which had been placed an Iron Age mound. Tumulus No. 44 yielded Kara Suk pottery (pl. XVIII, 3) and a vessel like pl. XVIII, 24 from Tomsk).

There were four graves at Lake Tagarskogo, each enclosed by a fence of vertically placed stones, each containing a stone cist, each orientated E.-W. In two of the graves (Nos. 36, 37) the skeletons were lying on their backs, with their heads to the east. The other two graves were in great disorder. Grave No. 36 was the richest, its contents being:

FOOD, ETC.:

- Sheep, cattle.

METAL:

- Copper-bronze:
  - 8 three-clawed pediform pendants (pl. XVII, 17–19). 22 nail heads (pl. XVII, 22).
  - 4 rings with overlapped ends and bilobed signet (pl. XVII, 9).
  - 15 doubly bossed plaques (pl. XVII, 32).
  - 5 small, cylindrical tubes, rolled from flat metal pieces (pl. XVII, 11, 12).
  - "Copper" clasps and buckle (not illustrated).

POTTERY:

- Round-bottomed, open-mouthed, faintly shouldered jar (pl. XVIII, 6), with hatched rim, and two horizontal lines at neck.

Graves No. 37, 38, 39, less rich, were as follows:

Grave No. 37.	Grave No. 38.	Grave No. 39.
"COPPER":		
Large convex disk with loop inside.	Tube.	Flat piece.
High ring of spirally curved wire (pl. XVII, 1).	Four casings.	3 pediforms, like pl. XVII, 17–19.
8 disks.		2 rings like pl. XVII, 1.
Nail or punch.		

POTTERY:

2 round-bottomed sherds.
Jars, incised decoration.

FOOD, ETC.:

Sheep, cattle.

Adrianov excavated five graves of Kara Suk type along the Tuba River. Their contents included:

POTTERY:

- Sherds.

BEADS:

- Cylindrical, white paste (pl. XVII, 13).

METAL:

- "Copper" hemispheroid disk; knife, simple angle shape (pl. XVII, 37).
- Gold tubular bead, ribbed (pl. XVII, 12).

Besides sheep, cattle, and horse bones, disturbed human bones were also found. The graves and gifts are assigned by Teplouhov to the Kara Suk culture, and by this assignation, the first knife is allocated to this culture. This assignment must be considered very tentatively, for the site was excavated twenty years before Teplouhov's work and yielded only sherds.[90]

Teplouhov has also identified with the Kara Suk culture five of six graves dug by Tugarin near Lugovskogo in 1914. Three of these were enclosed in stone fences, the stones of which hardly protruded above the ground; two graves lacked enclosures. All were orientated E.S.E.–W.N.W. Two graves lacked cists. In three graves the human skeletons had been greatly disturbed. In one the skeleton lay on its left side, with its head to the S.E. In one grave the skeleton was on its back, resting on a layer of ashes. The contents of the graves included sheep bones and also:

METAL:

- "Copper" finger ring and a high ring band.
- Knife fragment (pl. XVII, 36).
- Complete, knob-hilted knife (pl. XVII, 25).

POTTERY:

- Six vessels with round, slightly pointed bottoms. One (pl. XVIII, 5) has a hatched rim band and horizontal incised lines, and herringbone design on the shoulder.

The high copper band and the finger ring are similar to those found at Tagarskogo and Askis.[91] Some details of the burial method are in the Kara

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[89] Teplouhov, 1927, pp. 99–100.

[90] Teplouhov, 1927, p. 100.

[91] Teplouhov, 1927, p. 101.

Suk style. For these reasons Teplouhov includes the Lugovskogo graves in the Kara Suk culture, and by so doing the angle knife is brought into the list of traits, with which type of implement one begins to thread the maze of the Eurasiatic "Animal Style" cultural configuration, for it is on these knives, as a hilt decoration, that animals reportedly first appear.

Teplouhov states that on these angle-knives the handle at the angle comes close to the blade. (That, however, is not apparent from the illustrations.) This type of knife is widely spread in the Minusinsk Basin, and many have at the butt end some kind of animal head: sheep, goat, etc. Some of these knife handles are cut through at the hilt,[92] and this feature, and also animal heads on dagger and knife hilts, is claimed to be reminiscent of the Seima type.[93]

At this point Teplouhov recapitulates the salient features of the Kara Suk culture: round-bottomed vessels, high copper rings, bilobed finger rings, pediform pendants, and angle knives. He believes that by this period the Minusinsk Basin had acquired the art of metal casting. Sheep breeding provided an important part of the economy of the region.

The shallow grave trenches, the enclosing stone circles, burial chambers of slab stones, the occasional occurrence of flexed burials interred on their sides—all are reminiscent of the Andronovo culture. A definite connection is seen[94] in the characteristics of pottery ornament: hatched triangles, hatched diamonds (rhomboids), circles, incising, and herringbone patterns. (These of course are common features of any pottery group whose designs are executed by incising—pitting.) Teplouhov further comments[95] that between round-bottomed vessels of the Kara Suk culture and flat-bottomed Andronovo ware there are transitional forms which sometimes have only slightly flattened or very narrow bases (pl. XVIII, 2, 9). But pl. XVIII, 2 is apparently a line drawing of Teplouhov *loc. cit.* fig. 15. It comes from one of the highly disturbed graves on the Bateni terrace. From its photographed form there is little reason to exclude it from Andronovo types, or to include it in Kara Suk. What the other contents of this grave were is not stated. Pl. XVIII, 9 is from Askis; does not look particularly flat-bottomed; does look Kara Suk in form.

Because two vessels (pl. XVIII, 36, 37) found by Kusnetzov-Krasnoyarskii at Askis are flat-bottomed, and because one found by Teplouhov at Kara Suk approaches a flat-bottomed jar (pl. XVIII, 35), the author attributes[96] to the Kara Suk culture two pots coming from Krivaya (pl. XVIII, 10, 11), and also the extremely atypical jar from Kamenka which has two perforated lug handles (pl. XVIII, 40).

On the Bateni terrace Teplouhov found a 20–30 cm. "uninterrupted culture level" with sherds which by decoration show relations with both Andronovo and Kara Suk pottery. Three of the partially destroyed graves excavated here Teplouhov attributes[97] to a transitional period between the Andronovo and Kara Suk culture. Grave No. 35 was enclosed by a stone fence, with ruined graves adjoining this on the N.W. and on the S.E. sides. In the central grave was a female skeleton, orientated N.E., and a pottery jar with a constricted flat base (pl. XVIII, 2). Further mortuary gifts included high copper band rings of thick wire, a wire ring, four disks (pl. XVII, 31). The S.E. grave was a child's, and contained a spiral "copper" ring (pl. XVII, 3), a "copper" tube (pl. XVII, 16) a plain "copper" band ring (pl. XVII, 10), and two copper bossed studs (pl. XVII, 30). In the N.W. grave, which had no cist, were two similar bosses (pl. XVII, 29). Of all this, only the pottery vessel (pl. XVIII, 2) can be considered as at all different from pure Kara Suk; for the grave types and metal implements are typical.

Teplouhov indulges in a short discussion of the extension of the Kara Suk culture beyond the Minusinsk Basin. He dismisses grave structure as a determinant in areas where there is no free source of slab stone.[98] Pottery, though limited, is considered a better clue. Angle-knives similar to the Minusinsk knives are known in Transbaikal and in the Baikal area, and were exhibited in the Troitsko-Savsk and Irkutsk museums. These knives he considers to be related to Chinese knife money.

Near Chita an unmarked woman's burial was excavated in 1925 which contained a flat gold

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[92] Kiselev, 1937b, p. 165, found one of these with his (ill-defined) later "Tagar" phase of the Kara Suk complex, in a grave at Tes near Minusinsk. See, Kiselev, 1937b, fig. 19, p. 155.

[93] Teplouhov, 1927, p. 101. For Seima, see Tallgren, 1926, pp. 137–140.

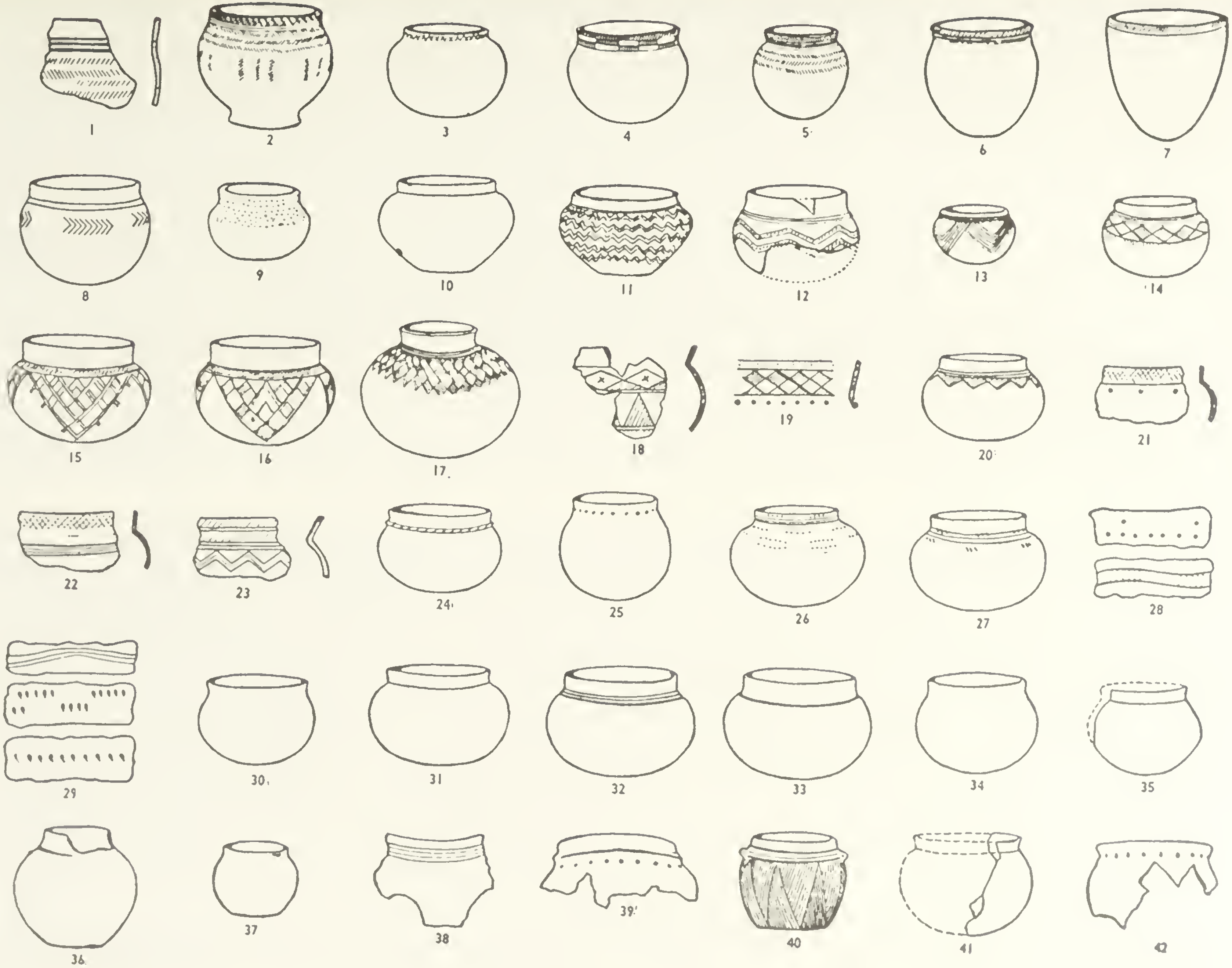
[94] Teplouhov, 1927, p. 101.

[95] Teplouhov, 1927, p. 102.

[96] Teplouhov, 1927, p. 102.

[97] Teplouhov, 1927, p. 105.

[98] Teplouhov, 1927, pp. 105–106.



KARA SUK POTTERY.

crescent (pl. XVII, 7) and two high bands made of "copper" spiral wire, typical of the Kara Suk culture. Pottery similar to Kara Suk ware was found in the Altai mountains by the Rudenko expedition in 1924, which also recovered it at Biisk.[99] Adrianov in his excavations near Tomsk found some similar pottery.[100]

Teplouhov then expatiates on the Tomsk finds, in order to incorporate them into the Kara Suk culture, and in order the better to allocate the many rich stray finds of the Minusinsk region. He writes:[101]

> It is a pity *I did not see* the diary of Adrianov, or the other extraordinarily interesting things obtained from his excavations; but among the material obtained by Kusnetzov from *neighboring* graves, partly published, partly drawn by Gryaznov in the Tomsk museum, are elements which on the one hand give a possibility of an even closer connection of some burials in the Tomsk graves with Minusinsk antiquities, on the other hand of expanding our presentation of the plentiful *copper* inventory of the Kara Suk culture, *not met with in the poor burials* of the Minusinsk region, but found there in great quantities *on the surface.*
>
> *Besides pottery appear* large, high, spiral rings, small wire finger rings, crude copper mirrors, plaques and spherical buttons with loops on the under side, cylindrical beads of white paste, and finally pendant fragments, apparently of the typical web-footed form. The *knives* of the Tomsk graves, *of original form*, are not encountered in the Minusinsk region, but Kusnetzov's objects, axes with a knob head (poignard axe), copper bowls with two small holes, spear points and wide bracelets with unjoined ends, well known in numbers in the *collected* material of the Minusinsk region, *permit us conditionally to supplement our Kara Suk inventory.*
>
> The *massive bracelets* found in the Minusinsk region *I would place in one culture group with the angle knives which have similar decoration.* As regards the celts, they in this period represent, apparently, original Minusinsk, two-eared celts, with decoration like that on some angle knives (see Martin, *L'Age du Bronze*, Pl. XII, 7, 9, 12). *These celts, arranged in a* (typological) *series, connect to the Seima-Andronovo celts*, and also show prototypes for the massive two-eared celts (Martin, *op. cit.*, Pl. I, II) widely spread not only in the Minusinsk region but also at Krasnoyarsk, where later forms appear *apparently* in the end of the Bronze (Age) Culture and change to the Angara type.

This long quotation brings into the Kara Suk culture several important traits which otherwise would not be there. However, upon examination one finds that Adrianov's excavation report was not seen; the material comes from neighboring graves dug by another person; the pottery is not described, the knives are "original" in form; and all the rest of the metal type objects (poignard celts, socketed celts, etc.), have been assigned by Merhart to the Full Bronze Age, "Corner-Stone Grave" culture, which by Teplouhov's terminology is the Minusinsk Kurgan Period I culture![102]

Teplouhov concludes his study of the Kara Suk culture, and the 1927 paper,[103] by postulating that the earlier stages of this developed in various parts of Siberia, and that the more southerly aspects of it, closer to the ancient great civilizations of Asia, developed more rapidly and acquired new forms. The northern people, lacking metal ore, progressed more slowly and preserved the Kara Suk culture longer. In the Minusinsk Basin, rich in minerals, developed the "Minusinsk Kurgan Culture," which lasted a long period of time and is represented by many tumuli and an enormous amount of excavated material. Closely related to the Kara Suk culture which it superseded, it is to be considered as also related to the Scythian culture of South Russia.

In the *Attempt at Classification* a summary account of the Kara Suk culture is presented, with some items not previously mentioned.[104] Our author believes that, while the Andronovo culture continued in western Siberia, the Kara Suk culture came in from the east, under Chinese influences; for "copper objects, analogous to Kara Suk objects—knives, daggers, pediform pendants—repeatedly have been found in the Tannu-Tuva Republic, in the Selenga Basin, and in China." No references are given.

This is the first mention of daggers in the Kara Suk period, and is an important one, for on it partially depends the theory of the Minusinsk bronze culture's originating the Animal Style. But in Teplouhov's long, relatively precise 1927 account, only three primitive knives are mentioned and illustrated, so that this, the second sentence of the 1929 description, has no antecedent explanation. Yet Griaznov,[105] using this statement, attributes to the Kara Suk culture an animal-headed dagger found at Koto-Köl near Lake Baikal, and then proceeds to make a typological arrangement of daggers and knives for the

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[99] Teplouhov, 1927, p. 107.

[100] Teplouhov, 1927, p. 106.

[101] Teplouhov, 1927.

[102] Merhart, 1926, pp. 58 ff., and pl. II.

[103] Teplouhov, 1927, pp. 107–108.

[104] Teplouhov, 1929, pp. 44–45.

[105] Griaznov, 1928–1929, p. 194.

Kara Suk and Minusinsk Kurgan cultures! And Salmony[106] writes: "Griaznov accepts the date of 1000 B.C., first established by Teplouhov for daggers of Yenisei origin, that is to say of the Minusinsk bronze era, which Teplouhov calls Kara Suk. It should first be mentioned that the succession established by these two Russian authors for this type deserves complete confidence, but they are inclined to give too early a date. It seems advisable to make the Kurgan period continue until the middle of the I millennium A.D."

For the moment one can ignore the date, but can one ignore the daggers? Merhart assigns[107] the earliest daggers to the Full Bronze Age—Minusinsk Kurgan I period. Kiselev did not discover any.[108] Teplouhov's definite report fails to mention them; but the abridged account laconically includes them. Does such an arrangement "deserve complete confidence?"

The pediform pendants are reported east of the Yenisei and are claimed to occur westwards to Hungary.[109] Hitherto unmentioned as being in the Kara Suk culture are white clay disks, supposedly imitations of *Cyprea moneta* shells. The biconoid "copper" bead, pl. XIX, 39, is also a newcomer, as are the knives, pl. XIX, 52, 53, 55.[110] Typical globular pottery is illustrated in pl. XIX, 32, 33. To the grave inventory are added upright stone slabs, 3 m. high, with carved human or sheep heads (pl. XIX, 57).[111] "An especially prepared grave for dogs points to the fact that dogs received special attention (at this time) as in the Andronovo culture" (not in the 1927 text for either culture).

"On a basis of typological studies and resemblances in the elements of ornament to the Kara Suk culture are to be referred the following stray objects occurring in large quantities: copper knives (*some of which are decorated with wild animal heads*, pl. XIX, 54), the type of celt illustrated in pl. XIX, 38, daggers (pl. XIX, 34), chisels (pl. XIX, 35, 36), and bracelets (pl. XIX, 50)."[112] This self-explanatory sentence reveals the introduction of the Animal Style into the culture, which is necessary in order to derive the style from Siberia, and particularly from the Yenisei.[113] But such an admitted typological attribution is surely too slim a thread on which to suspend such a theory. In view of the absence of these objects in either Teplouhov's 1927 text, or Kiselev's 1937 report, or Merhart's 1925 study from which Teplouhov derived much of his detail for his 1927 publication,[114] their inclusion in the Kara Suk culture should remain doubtful, at least.

Teplouhov calls attention to a possible relationship between the Kara Suk culture and the Fatyanovo on the middle Volga.[115] Certainly, the pottery in ware and decoration is similar. Tallgren has dated Fatyanovo to 2000–1700, and Childe placed it in his Period III.[116] Teplouhov postulated a date of 1000 B.C. for the Kara Suk manifestation,[117] a date questioned by Tallgren, who was inclined to consider an earlier period, and by Salmony, who posulated a later one.[118]

There is thus a considerable latitude in dating possibilities. Teplouhov considers the Kara Suk culture to have followed the Andronovo. If it were, however, contemporary, a group possibly related to the Fatyanovo, then the earlier date might obtain. Yet if the animal-headed knives and daggers belong to this group, the dates should be after the 7th century.[119] But, except on a typological basis not amply demonstrated, there is little proof that these do belong to the Kara Suk period. We are forced then to consider that the characteristic Kara Suk culture, with its typical grave form, its globular pottery, and its knowledge of metal working, flourished after the turn of the millennium. But we cannot admit on archaeological evidence any origin for the Animal Style in this complex.

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[106] Salmony, 1933, p. 84.

[107] Merhart, 1926, p. 122.

[108] Kiselev, 1937a.

[109] Teplouhov, 1929, p. 44. In Hungary, Hampel, 1887, pl. LIV, 3, 12; for Czechoslovakia, in La Tènetimes, Schránil, 1928, pl. XLVIII, 4, and p. 248. Not in Bronze Age Hungary, Tompa, 1937; Patay, 1938.

[110] Merhart, 1926, *passim*, and pl. III, attributes these beads, and primitive daggers to the Cornerstone Grave = M.K. I culture.

[111] For a detailed account of such *kamenn'ie bab'i* (stone mothers) see Griaznov and Schneider, 1929, who believe them an introduced trait, dating from the Kara Suk period and later.

[112] Parentheses are Teplouhov's 1927, p. 45; italics mine.

[113] Borovka, 1928, p. 76.

[114] Merhart's 1925 paper, in which 15 kurgans are mentioned, and the contents of six described, is referred to in Teplouhov, 1927, p. 108, and the illustrations of knives, (pl. VIII, 22, 25, 36) are the same as Merhart's from Kurgans K_2 and K_8.

[115] Reallexikon d. Vorgeschichte, III, 1925, p. 192. See also, Tret'iakov, 1931, on new Fatyanovo excavations.

[116] Tallgren, 1926, p. 142; Childe, 1939, p. 334, who also considers the Seima hoard as belonging to descendants of Fatyanovo warriors, which would make the relationship of this "culture" to the Andronovo culture even less likely.

[117] Teplouhov, 1929, pp. 44, 60.

[118] Tallgren 1928a, p. 187, Salmony, 1933, pp. 20–21.

[119] Salmony, 1933, p. 30.

D. THE MINUSINSK KURGAN CULTURE

In 1929 Teplouhov summarized the Afanasiev, Andronovo, and Kara Suk grave cultures, and proceeded to his famous classification of the periods which witnessed the great development and use of the Animal Style in bronze objects.[120] Succeeding the Kara Suk phase in the first millennium B.C., appeared the rich Minusinsk Kurgan culture of the Late Bronze Age, which developed parallel to the cultures of the open Eurasiatic steppes. A great part of the sepulchral constructions, as well as many of the copper and bronze objects found on the steppe surface, are, he wrote,[121] to be referred to this culture.

The tumuli, usually grouped in necropoles, often occupied entire fields extending over several kilometers, an indication of the greatly increased population at that time. These tumuli or kurgans were of various heights, some being flat, some attaining ten meters' height. Usually, they were surrounded at the base with a rectangular fence of large stones, placed end-wise. At each corner of the fence, and frequently along the walls, stood taller stones (up to 4–5 m. high, and weighing 35 tons). The fences were orientated on their short axis S.W.–N.E., as were the large stones at the enclosure angles. Frequently, a single stone rose to the southwest of the larger kurgans.[122] But the kurgans usually lacked enclosures in those regions where loose stone was not available.

The fewer the number of kurgans in a necropolis, the higher and larger they were. The greater the quantity of tall stones in the N.W. and S.E. enclosing walls, the more recent was their placement.[123] Under one mound, within one enclosure, sometimes occurred several graves. The axis of these graves, as in the preceding cultures, was S.W.–N.E. In the earlier tumuli might occur individual graves, but usually several individuals had been interred in one grave.

There are transition forms between the Kara Suk graves and the Minusinsk Kurgan type surrounded with fences.[124] Kara Suk graves, constructed of small stones, with various adjoining areas containing children's graves, invariably lacked the tall stone fence. In the Kurgan culture mound enclosures (axis S.E.–N.W.) stone partitions separated the graves. One group of burials excavated by Teplouhov was under flat mounds with contiguous enclosing fences. The graves were aligned in rows, orientated S.E.–N.W., and were marked by tall stones at the grave corners. The mortuary gift inventory placed these graves typologically at the very beginning of the Minusinsk Kurgan culture. The later graves, which were covered with a common kurgan, did not have individual fences and were enclosed by a common fence with separate tall stones marking the grave divisions.

The Kara Suk sepulchral constructions were family tombs. Possibly the earlier Minusinsk Kurgan mounds covered family interments. The later ones are inferred to have been great clan graves. The larger kurgans contained some hundreds of skeletons. From the lack of diversity in mortuary gifts Teplouhov postulated that the deceased were socially equal. He also noted that the construction of such large tumuli would have required the labor of many people, and hence collective work done by the entire society. Food remains in the graves, chiefly of sheep, cattle, and horse, he considered to demonstrate the development of cattle breeding, while the presence of hunting and fishing implements in the funeral inventory indicated the importance of these pursuits in domestic life.

The physical type of the Kurgan culture folk is declared to have been similar to Afanasiev and Kara Suk people: dolichocephalic, leptoprosopic, with a narrow aquiline nose and a protruding occiput. These features are claimed to distinguish this population from the contemporary natives of Central Asia. Teplouhov thought it quite possible that the Kurgan culture people were the blue-eyed and light-haired Din-Lin or Boma ethnic group, who, according to Chinese chronicles, lived along the Yenisei. This population was later replaced by "Asiatic," i.e., Mongoloid, brunette brachycephals.

The Minusinsk Kurgan culture has been subdivided by Teplouhov into four phases, dependent on the disposition of the mounds in the cemeteries, the diversity in tomb arrangement, and distinctions in funeral inventory. Transitional forms frequently occur.

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[120] Teplouhov, 1929, pp. 42–45.

[121] Teplouhov, 1929, p. 45.

[122] Tallgren, 1917, figs. 7, 8, 10 for illustrations.

[123] Teplouhov, 1929, p. 45.

[124] Teplouhov, 1929, p. 46.

I. Minusinsk Kurgan I

The first phase recognized was marked by small kurgans surrounded with square enclosures.[125] When plural graves occurred under the mounds, the fence was rectangular, with its long axis S.E. to N.W. (pl. XIX, IV$_1$, kurgan at Lake Podgornoia near Bateni). At the enclosure corners were high stones. Similar slabs, sometimes placed symmetrically in the N.E. and S.W. walls, marked the intervals between graves. In the stone-filled grave pit was a rectangular funeral chamber of wood beams or of vertically placed stone slabs. The bottom of the chamber was filled with small stones. The chambers were roofed with beams or slabs, above which was a filling of pebbles and earth.

One or several people were interred in the chambers, lying extended on the back, head to the S.W. If secondary burials occurred, the earlier skeletons usually were disturbed. The grave inventory was as follows:

Pottery:
- Usually a conoid jar with flat bottom, thickened convex rim. (pl. XIX, 60).
- Exterior surface black, polished.
- Decoration by incision, embossing by extrusion from the interior, and poorly executed punctate hatchings.
- Form variants included cups and goblets.

With male skeletons were found:
- "Copper" (bronze?; *medn'ii*) knives, pl. XIX, 63, daggers, pl. XIX, 68.
- "Copper" and bone arrowpoints, pentagonal, pl. XIX, 58, bilobed, pl. XIX, 59.
- "Copper" axes, with wood handles, circa 40 cm. long, having "copper" butt-sheath (stave-end), pl. XIX, 70.

With female skeletons:
- As constant occurrences were skin bags, sewn with sinew, frequently with embroidered ornament. In the bags were "copper" knives, awls (pl. XIX, 67), needles (pl. XIX, 65), bunches of sinew thread and sharpened bird feathers.
- "Copper" hemispheroid disks, with bossed rims, were used as headdress ornaments, pl. XIX, 66.
- Beads, of glass, stone, and paste; "copper" biconoids, like Kara Suk beads.[126]

With men and women, in fur-lined cases:
- "Copper" disks, with loop on reverse, serving probably as mirrors, pl. XIX, 69.
- Bone combs, pl. XIX, 71.

Exceptionally found: "Copper" sickles (knives?), pl. XIX, 61.
- Axes (socketed axes) with ornaments (on butt), pl. XIX, 72.
- Celts (socketed celts), pl. XIX, 62.

Having reported all the above metal implements to have been made of "copper" (*medn'ii*), Teplouhov then wrote that "all the objects of massive bronze bear a character as if for simple work, and in most cases were undecorated." It is probable that the objects were made of bronze.

The Minusinsk Kurgan culture I is the same as Merhart's *Ecksteinkurgane der Vollbronzezeit*,[127] which on Merhart's analysis is composed of at least two materio-ethnic elements: a northern from which was adopted geometric ornament found on celts and some knives and daggers, and a southern which contributed the Animal Style.[128] The angle knife, as we have also seen from Teplouhov, was already present when this style intruded, as was the basic cultural substratum from which the Kurgan culture arose. Socketed celts belong to a northern culture group which came into the Minusinsk Basin from the west. The "Krasnoyarsk" (earless) type, the six-sided celt, the celt with perforated sides, and the characteristic Siberian two-eared celt whose ancestry is not yet ascertained are all considered to be western intrusions.[129] All these types are attributed to M.K. I. The celt with an ear on the wide side is reportedly actually found in graves of this period.[130]

According to Merhart,[131] relations to Scythia are more apparent than real. The simple daggers with leaf-shaped blade (greatest width ⅓ of distance from hilt to blade-tip) are comparable to Scythian *akinakes*,[132] which, however, are usually of iron, and over 40 cm. long. The Siberian poignards are of bronze or copper and under 30 cm. in length, while the *akinakes* blade is widest at the hilt, with straight tapering sides. The heart-shaped hilt end (parrying bar) is the closest

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[125] Teplouhov, 1929, pp. 46–47, 60–61.

[126] These are mentioned for the Kara Suk period only in the short 1929 résumé.

[127] Merhart, 1926, pp. 27–28, 120–132, 135–143.

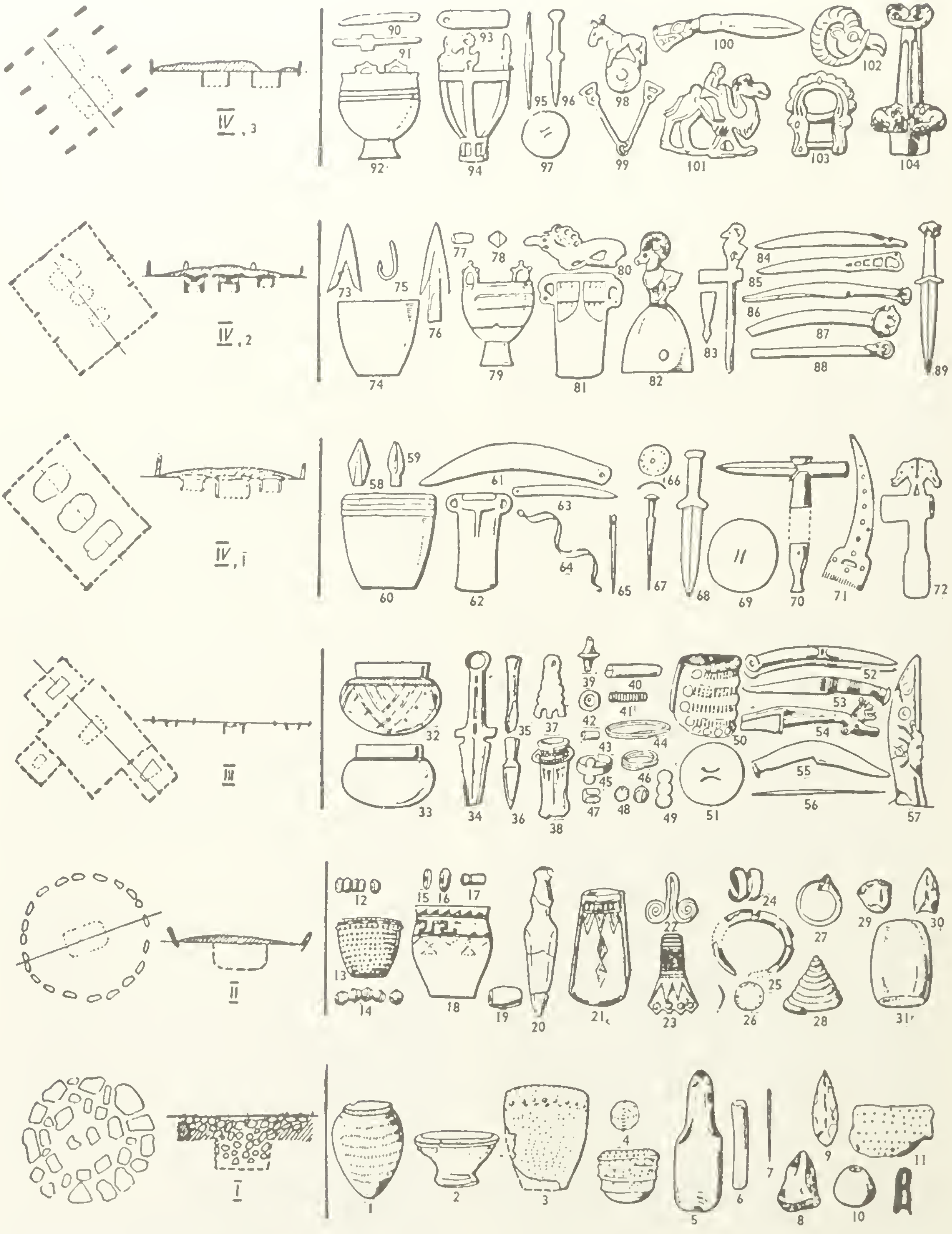
[128] Merhart, 1926, p. 120.

[129] Merhart, 1926, p. 141.

[130] Merhart, 1926, p. 141.

[131] Merhart, 1926, pp. 121 ff.

[132] Minns, 1913, pp. 71, 86 for description. Merhart's observation, 1926, p. 122, that "*Die Ahnlichkeit ist freilich eine mässige*" seems refuted however by Toll, 1929, p. 185.



Characteristic objects of Teplouhov's prehistoric sequence.

analogy between these Scythian and Minusinsk daggers. The dagger with open, vertically perforated hilt (the Tomsk type[133]) Merhart considers[134] to be a northern form which influenced the Minusinsk Bronze Age dagger, which, however, Toll would have arrive in the 5th century from the south.[135]

The only other trait connecting Siberia and Scythia in this culture is the Animal Style, which again is a rather unsatisfactory correlation. Merhart discusses several elements of the Animal Style which "appear in the graves of the Full Bronze Age (M.K. I) or pieces which *must* be contemporary with that grave inventory."[136] Bird heads, a design element on *late* socketed celts, knives, and picks, have perforated or ringed eyes as versus Scythian flattened plastic swellings, a difference considered to weaken the concept of a direct connection between the two areas, but which would indicate an origin center somewhere between them. Comparisons are drawn[137] with the Shumeiko barrow find on the Dnieper, dated by Rostovtsev to the 6th–5th century.[138] "But one will hardly need to put the Minusinsk parallels so high."[139] With such a subjective statement, the plausibility of dating possibilities dissolves before our eyes. How high and how low to date objects, by art comparisons, is an unsolvable and debatable question. And there is no certain confirmation that bird heads definitely occur in this period, though they are stated to occur on *later* socketed celts.[140]

Standing animals—horses, stylized bears as hilt ends on daggers, knives (pl. XIX, 86)—are definitely allocated to only one Full Bronze Age kurgan, published first in 1898.[141] The characteristic form is lacking in Scythia, where, however, occurs the comparable "ring-footed" animal in conjunction with Greek-Near Eastern motives.[142] The Scythian animals have circular ears, while the Minusinsk have crescentic, and in the Minusinsk region the mountain goat (argali) with head turned back, a favorite Scythian form, practically does not appear.[143]

Animals enroulé, related to the "standing animals," have been definitely placed at the end of the Full Bronze Age by one find in a kurgan which contained a Bronze Age grave and one of the succeeding period.[144] Such animals Merhart considered to have spread from the Black Sea.

Attributed to this period likewise are mountain goats (argali) and stag figures—both early Near Eastern forms—which appear "to be sure, first in the Collective Kurgan Period (i.e. M.K. II)."[145] Why they should be attributed to the earlier period is not clear. Fish and "horsehoof" decoration are put in this period,[146] but neither are documented finds in this culture's graves.

The Animal Style, then, in M.K. I, is not factually certain. The "rolled" and the "standing" animals are each allocated by a single doubtful occurrence. The bird head attribution is weak, and the fish, horsehoof, and goat-stag figures are not fixed at all. Merhart considers the style to be "Old Scythian"[147] coming as a later admixture to the Siberian Full Bronze Age. He dates this period between the 6th and 3rd centuries B.C.[148] This date is derived from comparisons with Ananino, further west on the Kama River. New excavations at Ananino[149] conclusively have shown the association of hexagonal celts with iron socketed lance points and knives, this Iron Age culture overlying a Khvalinsk culture stratum. Iron appears on the Yenisei in M.K. III.[150] There is no reason to suppose a differential time lag in the diffusion of two vital traits of a culture. Ananino's cultural correspondence must be correlated to M.K. III, not M.K. I.

The relations of Scythia, Siberia, and China at the time of the Animal Style have been voluminously published since Reinecke.[151] Pre-Han interrelationships of the Near and Far East have recently been re-examined on the strength of archaeological excavations (rather than art-appreciative, typological comparisons) by Christian.[152] At the same time appeared Karlgren's fine study on Chou bronzes,[153] based on his close analysis of Yin and Chou bronzes, which resulted in the recognition of a late Chou (after 771 B.C.) or Huai style-period, which he dates to 650–220 B.C. and believes to have been well established before the period of the Warring States.[154] To the Huai period he has assigned many elements of the Animal Style. Rostovtzeff earlier recognized some of the affinities of "Chou" animal décor elements with the Animal Style.[155] He considered that Iran was the origin center which contributed the Animal Style to China and Scythia. But in 1929 recognizing the Mesopotamian similarities of the Chou ogre mask, the eagle-griffin, and the dragon, he wrote that whence they came, "we do not know."[156]

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[133] Merhart, 1926, p. 136.

[134] Merhart, 1926, p. 122.

[135] Toll, 1929, p. 187, but there is nothing by which to date this dagger *in* Siberia.

[136] Merhart, 1926, p. 124. Italics mine. The *must* is not explained.

[137] Merhart, 1926, p. 125.

[138] Rostovtsev, 1922, p. 42.

[139] Merhart, 1926, p. 125.

[140] Merhart, 1926, p. 124.

[141] Merhart, 1926, p. 125.

[142] Merhart, 1926, p. 126.

[143] Merhart, 1926, p. 127. Martin, 1897, pl. xxix, pp. 30–31, is cited in illustration. But these, however, seem to be simple standing animals. The bowl with animal handles, with heads turned back, in Borovka, 1928, pl. 58, attributed to the Iron Age, is in form typical to that of the Kara Suk type, which may lend weight to Merhart's belief (1926, p. 38) that this culture persisted till the Iron Age.

[144] Merhart, 1926, pp. 127, 128.

[145] Merhart, 1926, p. 130.

[146] Merhart, 1926, p. 132.

[147] Merhart, 1926, p. 142. But none of these traits is included by Teplouhov.

[148] Merhart, 1926, pp. 180–182.

[149] Zbrueva, 1937, pp. 95–111.

[150] Teplouhov, 1929, p. 48.

Rostovtsev has shown that shortly before the Sarmatian incursions to China, the following elements of the "Scythian" Animal Style were borrowed: beaks and eyes as ornaments, the treatment of extremities in a conventional way, the filling of the surface on the animal's body with figures of other animals, animal palmettes, etc. But he concludes, "the early Chinese Animal Style has almost nothing to do with the early Scythian Animal Style."[157] His later publication does not broach this question,[158] but he has shown the concordance of the later Han pieces with the "Sarmatian" style.[159]

Karlgren's careful analysis has more recently demonstrated a series of Scythian Animal Style elements (some of which are more characteristic of the later "Sarmatian" style) occurring on Huai bronzes. Amending Griessmaier's list[160] of mutual Huai-Scyth traits—plait patterns, rope patterns, dot rows or dot filling, concentric circles as eyes, hind-parts adorned with big spirals, peculiar spiral bands—he adds the animal with returned head, the streaked or dotted animals, and the animal enroulé.[161]

Karlgren's lucidly illustrated quantity of Animal Style traits on Huai bronzes conclusively indicates pre-Han Scythian interrelationships, at a time when both Teplouhov and Merhart would wish to date M.K. I. If one could believe in the presence of the older Animal Style on the Yenisei, the cultural equation could be: Huai-M.K. I-Scythian. Since the Huai-Animal Style traits occur in the oldest Scythian period, the Archaic of the 57th centuries, and survive, more precise dating is impossible, for the Huai period is also dated to the 73rd centuries B.C.[162] Perhaps "impressionistically" one could place the period of interrelationship at the 73rd centuries, when in Scythia bloomed the classic "Paticapaean" period,[163] and in China is the date most frequently used (as a *terminus post quem*) by Karlgren. The Minusinsk region, therefore, lying between these two provinces, may have achieved its first great Bronze Age acceleration, the Minusinsk Kurgan period I, at this time, and received the first impulses of the Animal Style from beyond the immediate confines of the Yenisei Valley.

II. Minusinsk Kurgan II

In the second phase of the developed Bronze Age culture distinguished by Teplouhov,[164] the tumuli and graves, orientated as were the M.K. I tombs (long axis S.E.–N.W.) occurred either separately or with those of the first phase. Larger than M.K. I kurgans, but found less frequently, these mounds were marked at the middle of the short side by a tall set stone. The large wooden (larch or birch) funeral chambers beneath the kurgans were usually roofed with a double layer of beams and birchbark. The burial chambers contained up to several dozen bodies, interred at different times. Merhart, designating this period that of the *Kurgane mit Kollektivgräbern*, wrote that the bark or beam, saddle or dome-roofed chambers might hold up to 200 skeletons. They were left open until the final interment,[165] after which the chamber was then closed, and the woodwork fired—a rite which foreshadowed the later cremations of the Iron Age.

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[151] Reinecke, 1897.

[152] Christian, 1937.

[153] Karlgren, 1937.

[154] Karlgren, 1937, p. 5.

[155] Rostovtsev, 1922, pp. 197–200.

[156] Rostovtsev, 1929a, p. 73.

[157] Rostovtsev, 1929a, p. 74. White's (1934, p. 52) contention of the origin of the Animal Style in the Ordos region cannot be substantiated.

[158] Rostovtsev, 1931.

[159] Rostovtsev, 1929b, p. 46.

[160] Griessmaier, 1936, p. 8.

[161] Karlgren, 1937, pp. 101, ff.

[162] Rostovtsev, 1929b, pp. 28–29, 44; Karlgren, 1937, p. 5.

[163] Rostovtsev, 1929b, p. 24.

[164] Teplouhov, 1929, pp. 47–48, 61.

[165] Merhart, 1926, p. 28.

Though M.K. I mortuary gifts persisted into this second phase, the characteristic contents of the M.K. II kurgans were as follows:[166]

POTTERY:
- Conoid flat-bottomed jar, rim not thickened as in M.K. I. (pl. XIX, 74). Paste black,[167] surface polished; no decoration.

SMALL OBJECTS:
- Glass biconoid beads, and clay beads (pl. XIX, 78).
- Stone tubular beads (pl. XIX, 77).
- Bone fish hooks and bone forked points (pl. XIX, 75).
- Clay imitations of *Cyprea moneta* shells, "already encountered in the Kara Suk period."[168]

METAL:
- "Copper":[169] small tubes, or rolled flat bits.
- Arrowheads, forked (pl. XIX, 73, 76).
- Hemispherical plates, like pl. XIX, 69.
- Spear heads.
- Mirrors, smaller than before, loops on reverse.
- Axes, now impractically small.
- Awls, finer, more elegant than before.

"As separate (stray) finds, socketed celts must be attributed to the second phase on a basis of ornament detail."[170]

"Characteristic of M.K. II is the presence of the Animal Style on various objects, now become exuberant."[171] Metal objects are adorned with the heads and bodies of goats, deer, and other beasts. In this period, and in M.K. III which is Iron Age, the Siberian Animal Style attains its apogee, after its hazy beginnings in M.K. I. Typical Animal Style artifacts of phase II, reported by Teplouhov, are:

- Socketed adzes or axes, with animal on the socket opposite the blade (pl. XIX, 83).[172]
- Pole-tops bearing a standing goat (pl. XIX, 83).
- Angle knives with animal heads (pl. XIX, 84), with open-work animal mouth or ladder end (pl. XIX, 85), with animal legs making hilt ring (pl. XIX, 87), with standing animal hilt (pl. XIX, 88).[173]
- Dagger with standing animal hilt (pl. XIX, 89).
- Plaques, sculpturally cast, flat, open work (ajouré), representing galloping or lying stags (pl. XIX, 80).

This Animal Style of M.K. II is characterized, according to Teplouhov, by circular eyes with small indented pupils, or pierced eyes and nostrils; circular endings on legs and tail; and round shoulders and hip (haunch) sections. Merhart pointed out the presence of palmette, plant rows, and circles.[174] A whole wave of new motives appears with the Old Scythian Animal Style, western (European Scythian) elements like rows of circles, and the griffin head and open-mouthed animal heads. Hence, the knife in pl. XIX, 85, considered by Teplouhov as a native object, by Merhart's interpretation should be considered an import. The griffin-headed dagger, though not actually found in graves of this period, is attributed by Merhart to it.[175]

Miniature bronzes, small "yokes" (purpose unknown), stave ends, forehead bands, etc., also become typical in this phase. The footed Scythian kettle is considered an intrusive element, as is a single bronze rhyton.[176] Teplouhov brings the two-handled bronze Scythian kettle or cauldron on high hollow pedestal (pl. XIX, 92),[177] a form widely spread over the Eurasian steppes,[178] in at the end of M.K. II times. But what constitutes the beginning and ending of these periods is not specified.

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[166] Teplouhov, 1929, p. 47.

[167] Tallgren, 1917, p. 74.

[168] These are not mentioned in the 1927 report.

[169] Teplouhov, 1929, p. 48. Copper (*medn'ie*) is written, but probably bronze is meant.

[170] Note again the attribution of socketed celts to a particular phase, an archaeologically dangerous practice. But if the attribution is correct, it may afford an aid in dating. Two purchased tomb collections from Jehol and north Chihli contained socketed celts and possibly datable objects, i.e., late Chou knife money and an animal *enroulé* comparable to a possibly 5th century animal from the Caucasus; see Arne, 1933, and Kuhn, 1935, pp. 136–138.

[171] Teplouhov, 1929.

[172] See also Merhart, 1926, pl. IV–V, 10, and pl. IX, 1–4.

[173] Certainly the Turbino knife with animal head, published by Tallgren, 1938, p. 127, belongs in this period, and not in the "Andronovo-Seima" culture.

[174] Merhart, 1926, p. 145.

[175] Merhart, 1926, p. 146. On p. 173 he claims that the "Sarmatian" iron dagger with ring head and straight guard appears with the griffin-head dagger, which would make this latter Iron Age. As both are attributions, Rostovtsev's observation (1929, p. 75, fn. 3) "Merhart has not convinced me," seems understandable.

[176] Merhart, 1926, p. 149, and Tallgren, 1917, p. 61, fig. 66 for rhyton.

[177] For description, Minns, 1913, pp. 79–80, and Tallgren, 1917, pp. 58–61, who reports that up till 1913, 165 examples were in the Minusinsk Museum alone. Both authors, in view of the presence of similar forms in pottery, believe the kettle to have been an indigenous object. Merhart does not. If it appears late, when the Animal Style had already been established, it would appear to be a foreign importation, and the pottery examples to be copies in a poorer region.

[178] At Martonosho near Kirovo (Elizavetgrad) south of the Dnieper in the Kherson, a large cauldron full of cow bones was found with a 6th century bronze amphora handle. Minns, 1913, p. 173.

Merhart, by plotting the distribution of M.K. II sites, has attempted to demonstrate the spread of the M.K. II cultural phase northwards down the Yenisei as far as the Kan River.[179] This movement he considers to have taken place before the later traits of iron-using, plaster and clay death masks, and cremation appeared in the Minusinsk Basin.

Teplouhov approaches a dating and an evaluation for M.K. II in the following words:

> Many elements of this culture, in shape and decoration, which are similar to Scythian and to Ananino culture objects, permit us to classify the beginning of M. K. II not before the sixth century B.C.
>
> But the mutual relationship between the Minusinsk and the Scythian cultures is not clear. It should be recorded that the objects of the Animal Style, which are so characteristic of the Scythian culture, find their prototypes not only in the first era of the Minusinsk Kurgan Culture, but also in that of the Kara Suk. Thus, the evolution of the Animal Style in the Minusinsk district, closely connected with other cultural manifestations, gives us a more complete picture of the development of the Bronze (Age) Culture than in other districts of the Eurasiatic steppe.[180]

Thus, the capstone to the cultural succession is adjusted; Teplouhov's typological structure is constructed; and Minn's earlier theory[181] that the Animal Style originated in the Yenisei Basin apparently substantiated. Teplouhov's classificatory scheme has been widely accepted, apparently by even such an iconoclast as Karlgren,[182] who, however, rightly rejects the dating thereof.

It has been the attempt of this paper to show just what this classificatory system is: a series of grave cultures, characterized by grave form and grave contents. But to the known occurrence of mortuary gifts in specific phases attributions have been made. And it is precisely upon those attributions that the theory of the development of the Animal Style *per se* in Siberia has been erected. But upon examination of the postulated, initial attribution of the Animal Style to Teplouhov's system (its theoretical first appearance in the Kara Suk period), it becomes increasingly obvious that there is no firm basis for belief in such an early appearance of the Animal Style along the Yenisei, and that the Minusinsk Bronze Age cultures do not provide the origin of this style.

This beautiful bastard art, nurtured perhaps by the Scyths, cannot yet claim its parents, though Turkestan may have cradled it.[183] Only when a corpus of graves and their contents, with a statistical analysis of the distribution and cultural affiliations of the mortuary gifts (for so far, despite Herodotus on Scythia and the Chinese Annalists on the Huns, this remains a grave culture) comprising the "Scythian-Sarmatian" or "Sino-Siberian" Animal Style cultures is published, can we escape explaining *ignotum per ignotius*, which Minns bemoaned when he first expounded the Animal Style to the English-speaking world. Siberia seems to stand alone. "The sources of all three Animal Styles, the Ionic, the Scythian and the Siberian, may be the same . . . (but) . . . the Siberian was directly influenced in all probability by neither the Ionic nor the Scythian."[184]

III. Minusinsk Kurgan III

The last of the metal-rich Kurgan phases is marked by two great changes: the introduction of cremation as a constant feature, and the use of iron in relative plenty. The tumuli of M.K. III generally were erected as individual units. When they occurred in groups or in rows, they were set at a great distance from each other.[185] These mounds were larger than those of preceding periods. Around the base were set many high stones, never less than two on the N.W., and two on the S.E. The square enclosing fence invariably was covered by the mound slopes. One typical plan and section, that of the kurgan near Lepeshka village on the Yenisei opposite Bateni, is reproduced in pl. XIX, IV_3.

Beneath the mound was a large funeral chamber containing many skeletons. In M.K. III the custom of cremating the bodies or skeletons of former burials began. The cremating was usually done in the funeral chamber, the walls of which frequently were heavily charred.

Teplouhov describes the grave inventory of M.K. III as follows:

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[179] Merhart, 1926, p. 29 and pl. I.

[180] Teplouhov, 1929, p. 48.

[181] Minns, 1913, pp. 261–262; Borovka, 1928, pp. 75–76. Rice, 1938, p. 381 with no cited evidence whatever, would seek its origin as far back as the Paleolithic.

[182] Karlgren, 1937, p. 99 and by Kuhn, 1938, p. 165.

[183] Rostovtsev, 1922, p. 197; 1931, p. 303, Pope and Ackerman, 1938, p. 308. For the unsatisfactory state of our knowledge of the area today, see Strelkoff, 1938.

[184] Rostovtsev, 1931, p. 580. But see the recent clarification of the Pontic Scythian culture by Schefold, 1938, who, unfortunately, had no access to the work of Teplouhov.

[185] Teplouhov, 1929, pp. 48–49, 61.

POTTERY:

Only vessels on hollow pedestals imitating large "Scythian kettles" are reported.[186]

METAL: BRONZE:

Punches or awls (pl. XIX, 95).
Miniature ritual daggers (pl. XIX, 96).
Shaft-hole axes (pl. XIX, 91).
Angle knives (pl. XIX, 90).
Mirrors like those of M.K. I, M.K. II (pl. XIX, 97).

These bronze tools are coarsely cast, being working implements. Finer objects include the small animal effigies and stag figures (pl. XIX, 98) and stone pendants. To this phase are attributed open work conic supports, decorated with standing goats (pl. XIX, 94), which were used to maintain and uphold the "Scyth" kettles.[187] Iron slag is reported to have been found in the mounds. Objects of M.K. I and M.K. II survive.

The culture change from phase II to III is marked by the appearance of cremation, iron, clay copies of "Scyth" kettles, and the supports for them. A major change also occurred in the Animal Style (see below). Individual objects of the earlier phases have been found east and west of the Yenisei, but the expansion of the entire culture beyond the valley is said to have been almost principally during M.K. III times.[188] This diffusion at this time is confirmed by the high earth kurgans in the Krasnoyarsk, Achinsk, and Mariinsk districts, which covered collective burials showing traces of cremation, and including a funeral inventory which contained miniature religious objects of M.K. III.

The bronze-using culture remained a long time in the Minusinsk Basin, which is isolated by heavily wooded mountains. But from the middle of the first millennium B.C., iron objects were widely in use on the open steppes of Eurasia. The iron slag found in the M.K. III tumuli is indicative of the acquaintance of the Minusinsk people with this new metal "long" before the beginning of our era. Iron axes, daggers, and knives analogous in shape to the bronze knives are probably, writes Teplouhov, to be referred to the end of M.K. III.[189]

This use of iron and the new Animal Style Teplouhov believes to have come into Siberia through the rival relations between China and eastern Mongolia with Iran and Turkestan in the last centuries. The southern borders of Siberia would have little by little been drawn into the sphere of international trade. Northern Siberia's forest products were prized in the south, and western and southern metal wares appreciated in the north. With the increase in trade, wealth and power were concentrated in the hands of individual traders and entrepreneurs who lived in the steppes of Mongolia and nearby regions. Eventually arose a system of khans, which later became the basis of administration in the highly populated nomadic countries of central and northern Asia.

Deep graves were constructed for dead khans, and the old collective burials of equal members of society observed in the older Minusinsk population disappeared. The khan graves are best known in the Altai and in the Selenga Basin.[190] At the time these graves were built, revived relations with the south allowed new objects to penetrate widely through the Minusinsk district, at the end of M.K. III.

It is at this time that the Minusinsk population, according to Teplouhov, adopted iron metallurgy and new Animal Style objects from foreign cultures. They then began to reproduce these objects, such as the bridle bit in pl. XIX, 99. Some Animal Style objects were still made sculpturally, like the hilt of the iron dagger, pl. XIX, 104, and the iron dagger, pl. XIX, 100. But the majority were made in relief (on one side of the object only), *viz.*, the small horse on the upper cross-bar of the bridle, pl. XIX, 98, buckles with goat-head figures, pl. XIX, 102, 103, and plaques like pl. XIX, 101, representing a nomad on a camel's back. In this phase of the Animal Style the eyes are characteristically bulging, not being, as formerly, concave or perforated.

Animals facing each other, heraldically placed, were the favorite motives. Teplouhov attributes to this period the famed rectangular, ajouré plaques, in relief on one side only, representing facing oxen, camels, and horses. In northern Asia they have been found from the Selenga to the Ob River, and are closely related to the Siberian gold plaques in the Hermitage.[191] These are supposed to reflect a strong "late" Persian influence, at least after the 3rd century B.C.[192] They are quite similar to the decorations on the felt rugs discovered at Noin Ula.[193] Teplouhov considers it quite possible that these beast plaques[194] were cast in the Minusinsk district, because of the great quantity found there. Subsequently, the idea of casting them would have been adopted by the forest populations of the Ob River, and even later in the Urals.

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[186] Just as Minyan ware is supposed to imitate metal prototypes, the pottery kettles of Siberia are probably poorer copies of the Bronze cauldrons so characteristic of rich Scythia. Though Minns, 1913, p. 80, and Tallgren, 1917, p. 60, consider the form native to Siberia, Merhart writes (1926, p. 149), *Minussinsk als Heimat dieser Kessel scheint mir nicht zulassig*.

[187] According to Tallgren, 1917, p. 60, and fig. 64.

[188] Teplouhov, 1929, p. 48, here apparently follows Merhart, 1929, p. 29, to whom no credit is given.

[189] Teplouhov, 1929, p. 49, Valmin, 1938, p. 373, suggests a Hallstart origin for such daggers, including one found at Malthi in the Peloponnese, which he believes comparable to the Siberian.

[190] Such as, apparently, Noin Ula, Pazirik, Shiba, and Katanda.

A later phase of M.K. III, the fourth and last part of the Minusinsk Kurgan culture proper,[195] is characterized by iron cult objects (already present in M.K. III) and by the use of plaster death masks. Only a few of these tumuli, which were very large, were excavated.[196] Merhart recognized this group as a second phase of his Collective Graves. These he dated, by a comparison with late Roman death masks in Kertch to the 3rd–4th centuries A.D.[197]

The Minusinsk Kurgan culture comes to an end after the 1st century A.D. when the Huns were subjugated by the Sien-pis.[198] This is the time of the great migrations, when possibly a new population penetrated into the Yenisei region to terminate the consecutive sequence of cultures which had arisen and flourished here for millennia.

But the classified cultures here under review seem rather, upon an examination of Teplouhov's and Merhart's major works, to be the Yenisei-Minusinsk representatives of a series of great cultures extending throughout East Russia and at least to Central Siberia. Teplouhov admits the development of the Afanasiev culture under influence from the "world of Iran," but which is more probably a forest zone or Woodland (in the American sense) type of culture. The Andronovo manifestation is richer as one progresses westwards, and probably was more advanced to the west, the Yenisei being a paler reflection. The Kara Suk culture has its closest relations in the Fatyanovo culture to the west. Thus, all the ancestry of the Kurgan period seems to be western. None has certain connections eastwards. But with the flowering of the Minusinsk Kurgan culture, the international essence of the Animal Style found along the rich and fertile Yenisei a special expression, which still remains to be disentangled from elements contributed by the great civilization centers to the east in China, and to the west in Scythia and beyond.

E. THE FIRST AND SECOND MILLENNIA A.D. IN THE MINUSINSK BASIN

Teplouhov's *Classification* continued to fit into a logical framework the post-Bronze Age (grave) cultures found along the Yenisei. The first of these is the Tashtik Transition period,[199] named for the Tashtik River near Bateni where the graves were first discovered.[200]

Hitherto, the traditional orientation of the graves has been from S.E.–N.W. The Tashtik graves were orientated N.E.–S.W. (with head to the N.E.). Northeast of the grave, usually, stood a row of tall stones, orientated N.N.W.–S.S.E. (pl. XX, $V_{,1}$). In the grave pit, depth from 1.5 to 4.0 m., was constructed a chamber of beams or boards of the same style as the funeral chambers of the Minusinsk Kurgan culture. Frequently, the floor of the grave chamber was paved with wooden blocks.

In the chambers were from one to three skeletons lying extended on their backs. If the chamber had no block paving, a layer of birch bark was laid under the skeletons. In one case, at

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[191] Teplouhov, 1929, p. 49. On these see Minns, 1913, pp. 253, 272–280. Roman coins (of Galba and Nero) were published and possibly were found with these plaques, giving a date of not before the 1st century A.D. See Rostovtsev, 1922, pp. 140–141.

[192] According to Rostovtsev, 1930–1932, p. 99.

[193] Dated with (specious) accuracy to 2 B.C. by a certain type of Chinese lacquer bowl. Shiba is likewise dated at 86–48 B.C. (Griaznov-Golomshtok, 1933, p. 32). Kuhn, 1934, 1935, 1938, accepts these dates and some others. Karlgren, 1937, p. 99, recognizes the validity of the dates of the only Noin Ula and Tultu south of Lake Baikal, which was dated by Han coins to 118 B.C. and later.

[194] Pope, 1935, p. 61, published a "buffalo" fight which is more probably the representation of a pair of yaks. The climate was probably too cold for buffalo.

[195] Teplouhov, 1929, pp. 49, 61.

[196] The Tes kurgan, with its masks, should apparently belong here, dated by Tallgren, 1922, to the 3rd–4th centuries A.D.

[197] Merhart, 1923, p. 44, using the same arguments as Tallgren.

[198] Teplouhov, 1929, p. 61, French text only.

[199] Teplouhov, 1929, pp. 50, 61.

[200] This culture has more recently been described in English by Tallgren, 1937c.

Oglakty, the body had been disposed on a wooden flooring constructed on four beam supports. In some examples in the Tashtik graves separate bones from secondary burials have been reported, and cremation has been inferred from traces of charred bones.

Curiously, most of the skulls were trepanned in the occipital region—possibly to extract the brains.[201] In the Oglakty graves the skin was preserved on some of the males, showing chestnut head hair braided into a pig tail. Mummification is considered to have occurred. On the faces of some mummified bodies were plaster masks. Frequently, the mask features were painted red: cheeks, lips, nostrils, and a pattern on the forehead. On the interior of the masks, with the exception of the eyes, which had been covered with bits of silk, were impressed the deceased's features, including the wrinkles and folds of the face and neck. Sometimes blond hairs were caught in the plaster. Teplouhov believed that the conception of using masks came to the Yenisei from the west; for eastward the practice did not occur until this time.[202]

In the Oglakty graves (nine of which were excavated by Adrianov, an exile, in 1903) dolls were found with some of the skeletons. These were made of leather, silk, and grass stuffing, with silk cloth faces painted in various colors. These have been considered to be the faces of those accompanying the deceased into the new world. Teplouhov believed that this concept may have come from China.

The funeral inventory of the Tashtik period includes:

POTTERY:

Black ware, black paste, and black shiny (polished?) surface.

1. Footed bowls ("Scyth kettle" type) without handles, of same type as M.K. III and IV (pl. XX, 2). Without decoration, or with incised and punctate or applied ornament at rim.
2. Flat-bottomed, open bowls with bulging sides (pl. XX, 3). Punctate rim bands as ornament.
3. Globular jar with high, slightly expanding cylindrical neck. Decoration—incised spirals (pl. XX, 1). Tallgren, 1937c, fig. 14 illustrates coarsely incised crescents in shoulder bands.

SMALL OBJECTS:[203]

Bone awls, with flat head (pl. XX, 6).

Wood troughs, cups with and without handles, pails with birchbark bottoms, spoons, arrow-shafts, narrow planks with red-painted, carved cross-pieces: all at Oglakty.

Pouches with silk facings, one of which, according to Tallgren, quoting Yetts, bore the Chinese symbol for *Shou*, meaning "longevity," Han in date. (Tallgren, 1937c, pp. 82 ff.)

Beads of glass, lentoid in shape, sometimes gilded, some with eye ornament ("eye beads") (pl. XX, 8, 9).

METAL:

"Scyth kettle" in miniature, like M. K. III (pl. XX, 4).

Gold earrings with characteristic disk head and trilobed droplets (pl. XX, 10).

No implements are reported.

Remains of sheep, horned cattle, and the horse also were found.

Teplouhov dates to the 3rd–4th centuries a group of graves excavated at Saragash near Bateni, one of which contained several plaster bust-masks. This small grave was covered with a square heap of stones, over a square grave pit enclosing a timbered crib with a timbered roof which had sunk. The timbering was charred, a witness of firing at the time of filling in the grave. In the grave chamber near the walls were great quantities of charred human bones, the skeletons of which had been cremated before interring in the grave chamber. Near these ash piles were the plaster bust-masks (pl. XX, 11).

These masks were not direct replicas, for they lacked the skin impressions on the underside. They were made individually and then attached to the bib-like bust shoulders. They were painted in red, sky-blue, and black colors. The faint eye openings were in blue, as was the hair, which descended in curls below the ears. The cheeks, lips, and the applied round ears were painted red. On the forehead and neck were patterns in red and blue, representing tattooing.

The physical type of person which must have been the model for these masks was different from the earlier dolichocephalic, narrow-nosed, and narrow-faced type. The bust-masks have a

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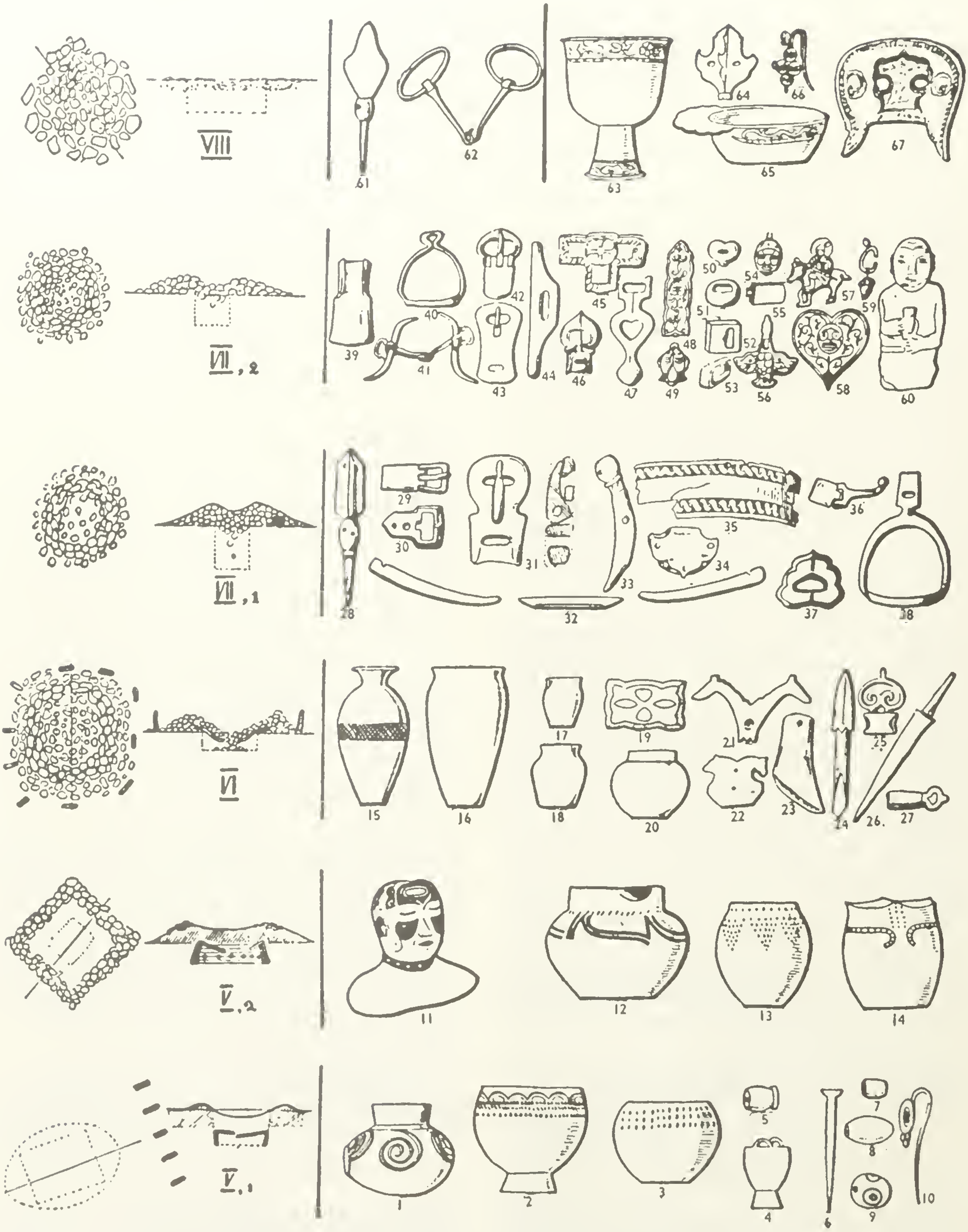
[201] Tallgren, 1937c, p. 73. Goroshchenko also illustrates trepanning done in the temporal region; 1900, pp. 30, 31.

[202] There is apparently no difference between this type of mask and the ones found in M. K. IV graves. Neither Teplouhov nor Tallgren give any distinctions. Goroshchenko, 1900, Tallgren, 1917, and Tallgren, 1937c, illustrate several. A gold mask executed "from a plaster model" was found in a 3rd century grave near Kerch (Minns, 1913, pp. 390, 434). But they are also reported as used until the present among the Vogul tribes in Siberia; Tallgren, 1917, p. 74.

[203] Teplouhov, 1929, p. 51.



CHARACTERISTIC OBJECTS OF TEPLOUHOV'S SEQUENCE IN A.D. TIMES.

wide and sometimes flat face, a wide nose, often with a quite low nasal bridge. These would be Mongoloid peoples, replacing at this time the "Nordics" of southwestern Siberia.[204]

Teplouhov reports[205] that the Chinese chronicles from the early centuries A.D. mention peoples on the Yenisei, with the Kirgiz (Gian-gun) living more to the south than the Din-Lin. Later, 7th–10th century chronicles indicate that the Turki-speaking Kirgiz were mixed with the Din-Lin, living in all the south Yenisei Basin region. But the chronicles called the entire population Kirgiz, describing them as with "red hair, rosy cheeks, and blue eyes." Teplouhov plausibly suggests that this description might rather fit the earlier long-headed peoples, the "Nordics."

The mortuary gifts in these later graves included pottery of the earlier type, and grey ware, flat-bottomed ovoid jars (pl. XX, 12), truncated more cylindrical versions (pl. XX, 13), and squat shouldered jars with short cylindrical neck (pl. XX, 14). Decoration was incised, punctate, and applied, in triangles and shoulder bands. Bone arrowheads (pl. XX, 24) and choppers (pl. XX, 23) and iron trilobed arrowpoints were found. Finer pieces included bronze heart-shaped belt buckles (pl. XX, 25, 27) and appliqué pieces like pl. XX, 19.

The physical and the cultural types show a mixture of population. But cremation and the limited number of excavated graves hinder a complete delimitation of ethnic groups at this time.

A closely comparable culture has been excavated in the cemeteries known as "Chaa-tas." These graves were covered with small round mounds of piled stones, enclosed in a circular ring of stones, as in the M.K. culture (pl. XX, VI). The graves were shallow rectangular trenches, roofed with small wooden beams, containing piles of cremated bones, though rare skeletons were encountered.

Besides animal bones (sheep, cattle, horse), the mortuary gifts included:

POTTERY:

A. Wheelmade, fine black ware.
   1. Tall, ovoid jar with constructed neck and flare rim, with raised, hatched band at middle (pl. XX, 15).
   2. Tall open-mouthed jar, plain ware (pl. XX, 16).
B. Coarse, handmade local copies of 1 and 2, and
   3. Small flat-bottomed jars (pl. XX, 17, 18.)

Teplouhov reports the distribution of the type 1 jar from Peking through Mongolia into northern Siberia, implying that it is not a local Yenisei form, whereas the B wares are.

Metal, as illustrated, included gilded bronze belt adornments, ajouré, like pl. XX, 19, and cast bronze plaques, such as pl. XX, 22, with heads of a bear and a horse. This plaque type (and curiously Teplouhov also includes the pottery, which is quite dissimilar) is reportedly a connecting link with later Tashtik graves. Iron tanged knives of the Chaa-tas culture are illustrated in pl. XX, 26, and a silver globular jar in pl. XX, 20.

Another group of graves, under stone mounds marked by a single high slab at the mound base, contained large vessels like pl. XX, 16. They were used as cremation urns, containing ashes, and often were found inverted. Teplouhov here quotes the Chinese chronicles' reference to the Kirgiz who cremated their dead.

In the 7th century the Kirgiz in the Minusinsk district were conquered by the Turki. Teplouhov places at this time a series of graves occurring under high stone piles, similar to pl. XX, VII$_2$ found in some parts of the Minusinsk region.[206] Such a grave was excavated on the Tashtik. It was a trench containing an extended burial, head oriented to the northwest.

This Turki grave contained in the southwest part of the trench, a horse skeleton—horse burial being a characteristic nomad trait. This type of grave is, however, new to the Minusinsk region, despite its frequency in the Altai mountain valleys (as in the Kudigra vicinity). Teplouhov postulates that this grave may have been that of an Altai Turk.

Other than the horse were found fragments of a quiver lid, a curved, flat piece with incised decoration (pl. XX, 35); a saddle-girth buckle (pl. XX, 31), and a small dagger with a knobbed head (pl. XX, 33), all in bone. Bronze buckles like pl. XX, 29, 30 were present. Iron objects were arrowheads, whistling arrowheads, having a small bone ball in the head cavity (pl. XX, 28), plain-tongued belt buckles (pl. XX, 29, 30), and simple stirrups (pl. XX, 38, 40).

At the end of the 7th century the Kirgiz entered into close relations with China. And from Hither Asia, via the Sogdians, there came to them an Orkhon alphabet of Aramaic origin. After a temporary submission to the Uigur Turks in the 7th century, the Kirgiz reasserted themselves, and by the 9th–10th centuries were playing the leading role in Central Asiatic nomadic life. The graves of this time[207] are grouped in cemeteries and heaped over with large stone mounds. The richer burials include, as previously cited, the interment of horses.

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[204] Coon, 1939, p. 170.

[205] Teplouhov, 1929, p. 54.

[206] Teplouhov, 1929, pp. 55, 62.

The mortuary gifts were many:

METAL:
- Bronze: Facings for objects, protective plates (pl. XX, 34).
  - Silver-plated bronze strap objects (pl. XX, 37).
- Iron: Buckles (pl. XX, 42, 43).
  - Clamps for harness or chain (pl. XX, 44).
  - Semi-socketed adzes (pl. XX, 39).
  - Horse bits (pl. XX, 41, 62).
  - Tanged iron daggers of previous types (pl. XX, 26).

BONE:
- Buckles of the same shape as iron buckles (pl. XX, 42, 43).

Separate surface finds of this period included:

BRONZE:
- Buckles (pl. XX, 46).
- Knobbed prongs, considered to be of late form (pl. XX, 36).
- Plaques, sometimes gold-leafed with decoration possibly of Chinese origin (pl. XX, 45, 48).
- Simple plaques and belt objects (pl. XX, 47, 50–53, 55).
- Pendants: small fish, Chinese (and Islamic) symbol of family happiness (pl. XX, 49), small duck (pl. XX, 56), heart-shaped with human face (pl. XX, 58), mask (pl. XX, 54), horseman (pl. XX, 57).
- Earrings: Of bronze, gold, silver, sometimes with pendants of glass (pl. XX, 59).

These objects appeared in graves and in separated hoards, together with coins of the Tang Dynasty (618–906 A.D.), and with ovoid, rimmed jars, like pl. XX, 20, of Chaa-tas type.[208] Stone sculptures of this period frequently represent men with arms folded to a held vessel, sometimes wearing ornaments like pl. XX, 60.[209] These statues occur in the Minusinsk district, but are found more often by the Kirgiz graves of the Tannu-Tuva Republic. Teplouhov believed that the principal residence of the Kirgiz in the 9th–10th centuries was south of the Saian mountains, and not along the Yenisei.

Teplouhov assigned to the 11th–12th centuries a group of flat graves, covered with small stones, at Saragash.[210] In the trenches (pl. XX, VII, VIII), which sometimes were board lined, were single skeletons, extended on their backs. Among the grave contents were noted iron whistling arrows (pl. XX, 61), and horse bits with large rings, of a late type (pl. XX, 62).

Little is known of more recent burials in the Minusinsk Basin, for they were probably unmarked above ground. Three graves which had no superstructures recently were discovered near Krasnoyarsk. In the wooden chambers lay single skeletons accompanied by a wealthy funeral inventory, including iron leaf-shaped arrowheads (pl. XX, 64), a silver chalice (pl. XX, 63), a silver flat-bottomed bowl with ledge handle (pl. XX, 65), and a silver-plated saddle (pl. XX, 67). Gold earrings with multiple spheroid drops (pl. XX, 66) may have affinities with Islamic jewelry.[211]

Teplouhov reports that finds similar to the silver vessels and saddle facings were found in hoards in the Minusinsk district, in Sub-Baikalia, in East Siberia and in South Russia. They are, he says, probably of Iranian origin, and belong to the 12th–14th centuries.

Later graves were not excavated in the Minusinsk district, though some 17th–18th century graves in Tannu-Tuva yielded a rich inventory. In the 18th century the Russians arrived on the Yenisei, and forced the majority of Kirgiz to leave the Minusinsk district.

Teplouhov closes his great classification at this point, with the admonition that it has been hypothetical to a certain degree. This warning has frequently been ignored, with the result that in some more recent writings the categorical comment has appeared that the (grave) cultures of the Yenisei area originated the Animal Style. We have attempted in this paper to demonstrate how Teplouhov himself considered his classification; to stress, as he did, his hypotheses; and to conclude, on Teplouhov's evidence, but contrary to his conclusions, that the Animal Style did not originate along the Yenisei.

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[207] Teplouhov, 1929.

[208] In this period belongs the cemetery found by Arne at Barsoff-Gorodok, where a cup bearing a Kufic inscription of the 9th century was found; Kühn, 1935, p. 134.

[209] The statue is illustrated in pl. XX, 60. In the text, Teplouhov, 1929, p. 55, the reference is to pl. XX, 66, a mistake. Possibly pl. XX, 47 is likewise a mistake.

[210] Teplouhov, 1929, pp. 58, 62.

[211] Earrings, unpublished, were discovered by the Joint Expedition to Iran, at 12th century Rayy, near Teheran.

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ABBREVIATIONS

BMFEA—Bulletin of Museum of Far Eastern Antiquities.

ESA—Eurasia Septentrionalis Antiqua.

GAIMK—Gosudarstvennaia Akademiia Istorii Material'noi Kultury.

IAE—Instituta Anthropologii, Arkheologii i Etnografii.

Ipek—Jahrbuch für Prahistorische und Ethnographische Kunst.

SMYA—Suomen Muinaismuistoyhdistyksen Aikak-auskirja.

WBKKA—Weiner Beitrage zur Kunst und Kultur Asiens.

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XIV

SOUTHERN ARABIA,* A PROBLEM FOR THE FUTURE

Carleton S. Coon

INTRODUCTION

THE one corner of the Asiatic continent with which archaeologists, ethnologists, and physical anthropologists have concerned themselves the least, for excellent reasons, is southern Arabia. This pardonable neglect stands in inverse ratio to the region's natural appeal and interest. The whole Arabian peninsula, from one standpoint, forms one of three vermiform appendices dangling from the main mass of Asia into the Indian Ocean. Arabia, southern India with Ceylon, and the Malay Peninsula, have all three served as *culs-de-sac* to old, discarded, and forgotten fragments of humanity, pressed out of circulation by the movements of more vigorous and more civilized groups to the north. The parallel between southern Arabia and the other two appendices is clear. The primitive Bedawin of the Hadhramaut, who form the substratum of that country's population, and the non-Arabic-speaking natives of Mahra and Dhofar, serve as the western counterparts of the Vedda, the Semang, and the Sakai.

But there is another facet to this comparison. Just as the brilliant Sinhalese civilization flourished in Ceylon, just as the Mon-Khmer civilization reached sculptural heights in the jungles of Cambodia and Siam, and Hindu culture was carried over into Sumatra and Java, so southern Arabia has at the same time played a second rôle, that of a hothouse of high oriental civilization in antiquity. Here flourished the famous kingdoms of the Sabaeans, Mineans, Katabanians, and Hadhramautis, whose splendors were immortalized by the biblical account of Solomon and the Queen of Sheba. Under the encroaching sands of the Empty Quarter lie the feet of splendid temples and lofty sky-scrapers, abandoned to the desert after the breaking of the Marib dam, and the shift of the frankincense trade from the overland route to the sea.

The peninsula of Arabia can hardly be called a unit. The Empty Quarter, probably the world's largest stretch of sheer and utter desert without oasis and without relief, acts as the center of a ring, about which are set the Arabian kingdoms, like jewels of different hue and lustre. The Empty Quarter divides these kingdoms as no sea could, for one can sail across seas, and some, such as the Mediterranean, and the Indian Ocean, have acted in history as highroads rather than as barriers. There is no barrier so great as a complete desert. The Empty Quarter may be crossed by camels and has been so crossed over long periods of time; this has been proved by the personal experience and inquiries of Bertram Thomas. Such crossings, however, are extremely exceptional, and most of the inhabitants of Arabia today entertain only fabulous notions of the actual character of this extensive waste.

Although it would please exponents of pan-Arabian solidarity to think that all of the Arabs in the whole peninsula and elsewhere form a racial and cultural unit, the truth is quite the opposite. Arabian unity north and west of the Empty Quarter may well extend into Syria, Iraq, and North Africa, but south of the great desert the vermiform appendix plays its retentive rôle. Here, small, ringlet-haired men, painted blue, swear mighty oaths over the tombs of Jnun, milk their

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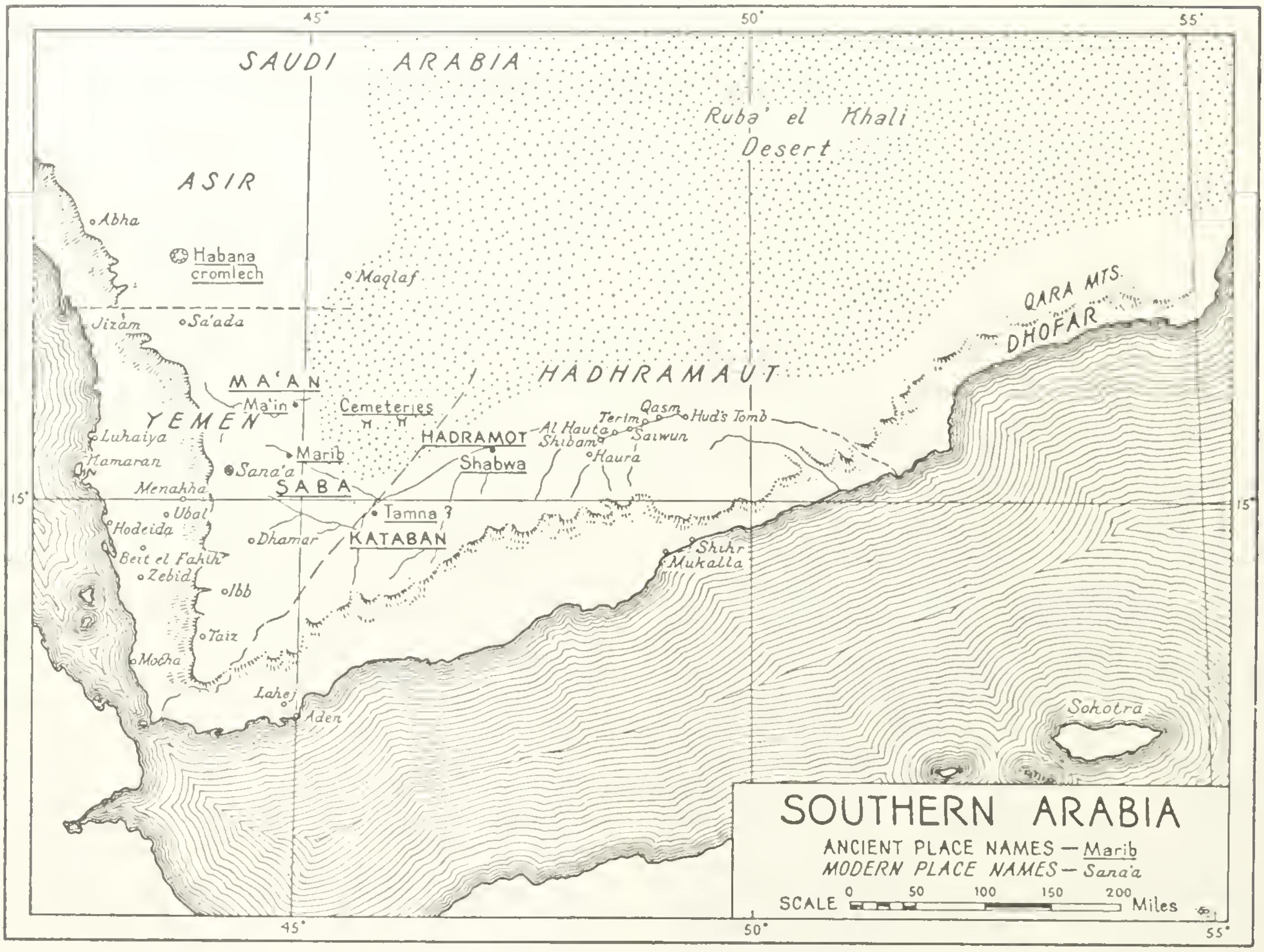
* The purpose of the author in writing this paper is to summarize the existing information, available to him, concerning the prehistory, archaeology, and ethnography of the portions of Arabia lying south of the twentieth parallel, especially the Kingdom of Yemen and the regions of Hadramaut and Dhofar, and the island of Socatra, and to interpret that data both historically and ethnologically. In so doing the author has drawn heavily on several sources: Major H. St. John Philby's articles in the *New York Times* of September 12 and 19, 1937; Dr. Cesare Ansaldi's book, *Il Yemen;* the sections written by Drs. Nielsen, Hommel, and Rhodokanakis in the *Handbuch der Altarabischen Altertumskunde;* Van den Berg's *Le Hadhramout et les Colonies Arabes dans l'Archipel Indien; Southern Arabia*, by Theodore and Mrs. Bent; and *Arabia Felix*, by Bertram Thomas.

The bulk of the information comes from the aforementioned sources, most of the rest from the author's field notes. The interpretation, unless otherwise acknowledged in the text, is original.



Map 10. Southern Arabia.

cattle, sleep in caves, and initiate their sons in mass ceremonies of an Australoid character. These men are not Arabs in the modern, Islamic sense; they are the survivors of an earlier age.

Southern Arabia may be divided geographically into a number of discrete units. Most important politically, and in reference to population, is its westernmost segment, the divine kingdom of Yemen, where approximately three million farmers water their terraces and reap their barley under the spiritual sanction of their Imam. The Yemen consists geographically of two main parts, separated by a formidable barrier. The first part is the Tihama, a narrow coastal strip in which sand dunes alternate with fields of sorghum, and occupied by a mixed population of Negroid serfs from Africa and small, elf-like, brachycephalic men, whose racial origin is still a mystery. The barrier is a ten thousand-foot escarpment, rising sheer from the coastal plain, crowned by a range of castellated peaks, and folded and eroded into countless valleys.

This escarpment has been almost completely terraced by man. On it grow crops of luscious fruits, various hard grains, and the entire supply of the world's finest grade of coffee. Beyond the escarpment stretches a vast upland plateau, sloping gently eastward and drained into the Wady Hadhramaut and the Indian Ocean. From the edge of the escarpment to the ill-defined border of the gradually encroaching Empty Quarter stretches a wide belt of terraced land on which great crops of grain are grown by the Imam's subjects. The desert borderland, itself once the seat of garden states watered by means of huge dams, is now occupied by a few scattered tribes of Bedawin, who make their living by exploiting the natural salt deposits situated near the great city-sites.

To the east of the Yemen, and to the south of the westernmost extension of the Empty Quarter, lies the famous region called Hadhramaut, a country whose size diminishes as one approaches it. To the outsider, the Hadhramaut comprises most of Arabia east of Aden, west of Mahra, and south of the desert. To the Hadhramis themselves, it includes only the narrow valley which bears its name, and the string of towns built along it. The Hadhramaut, like the Yemen, is the seat of intense agricultural activity, but in a much more restricted sense, since only the river valley and the beds of its tributaries are actually productive, while the nearly denuded mountain region lying between the valley and the sea is used for camel pasture and the passage of caravans. The sea coast of the Hadhramaut is a negligible geographical expression, since the cliffs which hem in this valley to the south arise almost directly from the water.

East of the Hadhramaut lies what is, to most ethnologists, probably the most interesting section of southern Arabia. This is the half moon of Dhofar, a small coastal plain hemmed from behind by the Gara Mountains, against which the full force of the Indian monsoon unloads seasonal rain in abundance. Dhofar alone retains the damp tropical climate which, the geologists tell us, at one time characterized the whole southern strip of Arabia. In Dhofar survive mangrove swamps, miniature jungles of tropical palms, and on the slopes above the plain, an abundance of those small, fleshy bushes from which are bled the frankincense tears so greatly prized in the ancient world. In the highlands behind Dhofar survive pre-Arabic Semitic languages;[1] and a cattle culture comparable to that of the Toda of India on the one hand and of the East African Hamites and Bantu on the other, as well as certain customs and practices of a very primitive character.

When we leave Dhofar we enter the domain of Oman proper, but we are no longer in the strict sense concerned with southern Arabia. The bulk of Oman is situated in a latitude north of Mekka, and even with that of Medina. Except for the alleged Negrito strain in the population of Cape Musandam, its relationships are primarily with the valley of Mesopotamia and with the coastline of Iran. Southern Arabia, in the strict sense of the word, cannot be said to extend north of the twentieth parallel.

PREHISTORY

There can be little doubt that, during parts of the Pleistocene period, southern Arabia enjoyed a much more felicitous climate than it does at present. The Empty Quarter, after all, is nothing but an eastward extension of the Sahara, a part of the general belt of arid uplands extending across vast expanses of Africa and Asia. Since the climatic history of the Sahara is now partly known, it is possible to reason by analogy with some hope of justification.

During the Pleistocene, a number of pluvial periods turned the Sahara, at alternate intervals, into a great plain of grass and parklands, drained by huge rivers which carved its deep wadys, now waterless and denuded, into sculptural masterpieces of erosion. In southern Arabia, the size and volume of the dry river courses bear evidence that the same process took place here as well, and that during these periods of abundant rainfall the Empty Quarter itself formed a grassy plain of lesser size, offering food and shelter to herds of ruminant mammals, and to man.

After the last pluvial maximum, Arabia, like the Sahara, began to dry out. The abandonment of Marib, the gradual disuse of the terraces along the Yemen escarpment, and the turning of the northern Arabs to pastoral nomadism with dependence on the camel, may all have been secondary manifestations of this increasing desiccation, and we have no evidence that the drying out process has yet come to an end. Arabia today holds somewhat less than six million people. Five thousand years ago, when agriculture was already old but literate civilization new, Arabia might presumably have held twice that number. If we are to reconstruct the history of Arabia, however, we must turn back still farther, and postulate a time in which the whole southern border of the peninsula resembled the present Dhofar, and in which the Empty Quarter and the regions north of it were grassy plains.

At that time, it is possible that Arabia was a home of human beings of ancestral European type, and advanced beyond their fellows in the glacial north. It is too early, however, to present this hypothesis with conviction, for at present Palaeolithic archaeology in Arabia may be said hardly to have begun. In the Nejd, Doughty[2] found Palaeolithic implements, in the form of handaxes; Henry Field,[3] in a motor trip across Transjordania and the desert border of Iraq, established the presence of Palaeolithic industries from the Acheulean stage upward, while Philby,[4] in his recent trip along the southern border of the Empty Quarter, has likewise discovered Palaeolithic implements of nature as yet unstated.

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[1] Thomas, 1937.

[2] Doughty, 1923.

[3] Field, 1934.

[4] Philby, 1937.

Miss Caton-Thompson,[5] however, has found Palaeoliths in situ in the Hadhramaut; these are of Levalloisian type, and poorly executed. They seem to have been used over a long period of time. So far, none of the hand-axes so typical of northern Arabia have been found south of the Ruba'-el Khali, which was perhaps as much of a refuge area in Palaeolithic as in historic times. In other words, the geographical forces which divide northern and southern Arabia into separate cultural entities today may also have operated as far back in human history as Pleistocene times.

Southern Arabia may also hold the answer to some of the problems concerned with the rise of the Neolithic economy in the Old World. The Yemen highlands and the corresponding highlands of Ethiopia seem to be old centers of terraced agriculture. In Ethiopia, a number of unique local species of cereals have been found. So far, the Yemen has escaped the attention of economic botanists, but this region may be of great interest in this connection. It is just possible that some aspects of the Neolithic economy may have developed in this area.

Megaliths, too, are present in southern Arabia. In his recent journey through Asir and the desert borderland of Yemen, Philby[6] noticed the presence of cromlechs similar to Stonehenge, made of double concentric circles of huge slabs of granite, with central corridors oriented to the east and west. He also found semi-circular passage ways, and vast fields of dolmen-like tombs both with and without corridors. Further study on the spot will be needed to determine both the age of these structures and their relationship, if any, with the megalithic complex in the Mediterranean and western Europe. At present, however, it would seem that they have a strong continuity, at least in an architectural sense, with the historic cultures of southern Arabia.

Aside from archaeology, southern Arabia may contain the solution of an important question in the racial field: "What rôle did the southern coastal strip of the peninsula play in forming a connection between the frizzly-haired, deep-pigmented peoples of Africa and Oceania?" In Africa the general Negroid family is represented by true Negroes, Pygmies, and Bushmen. In southern Asia and Oceania, from India to Fiji, one finds various kinds of Negritos, all occupying marginal areas, as well as Melanesians and Tasmanians. There is probably some genetic continuity between the Negroids of these two major areas, and since the fringe of southern Arabia lies in between, some traces of whatever group served as link might possibly be expected to survive. Such a survival does actually occur.

The population of southern Arabia, aside from the Yemen, consists of two major elements—Mediterranean and Veddoid. In the Hadhramaut Valley, the agriculturalists are predominantly Mediterranean; among the Bedawin, and among the wilder tribes of the Dhofar region, the Veddoid element increases in importance. There is, however, a third element—frizzly-haired, short statured, round-headed, which occurs among sporadic individuals, and which is presumably Negrito. Individuals possessing these traits are not to be confused with African Negro hybrids, who are well recognized and who are differentiated from the rest of the population in a social sense, nor with Somalis. The tribesmen of Cape Musandam, in Oman, are said to be predominantly Negrito.[7]

The tentative identification of a submerged Negrito strain in southern Arabia, which can be confirmed only by further work on the spot, leads one to suggest that the connecting link between the African and Oceanic Negroids may be Negrito—the only type which both have in common. It is very likely that the Negrito is an extremely ancient human type, as witnessed by its marginal position, and that it antedates in development both the African Negro and the Melanesian, which latter is probably a hybrid. Southern Arabia was presumably, at one time, merely a segment of the forested belt which the Negritos of the world occupied, and in it the Negrito factor may well antedate the Veddoid.

THE PRE-ISLAMIC KINGDOMS[8]

When we approach the problem of the literate city states of pre-Islamic Southern Arabia, we reach somewhat firmer, though still shaky, ground. We know that there were four kingdoms, from northwest to southeast: Ma'an, Saba, Kataban, and Hadhramaut. Their capitals were, in order, Ma'an, Marib, Tamna, and Shabwa. Of these four, Tamna has not even been located. Ma'an and Marib were visited by furtive epigraphers in disguise, in the 1880's, and then left unknown until 1935, when Hellfritz, under escort by the Imam's soldiers, was hurried through the latter. The same adventurer also passed through Shabwa equally rapidly. In 1936–37, Philby spent a total of eight days at Shabwa and peered at Marib from a distant hill.

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[5] Caton-Thompson, Gardner, 1939.

[6] Philby, 1937.

[7] Jayakan, 1904; Miles, 1919; Wilson, 1928.

[8] The literary evidence upon which much of this section is based is drawn largely from Nielsen, *et al.*, 1927.

Under these circumstances, it is no wonder that our knowledge of these kingdoms is scanty. It is largely derived from Greek accounts, and from the translations of inscriptions—some copied in the cities themselves, others photographed and copied in the Imam's Museum at Sana'a, and still others brought out to the coast at Aden. Other objects in the Imam's Museum, hastily examined by the author and by Dr. Schlobies, contribute further evidence. The Peabody Museum of Harvard University and the Semitic Museum of the same institution have small collections which await competent study.

Despite the paucity of information and the general lack of interest in this most important field, linking as it does the civilizations of two ancient worlds, the trade of the forger flourishes. The rare visitor to Sana'a is besieged by dealers in statuettes and inscribed stones, some blatantly poor and new, others clever and difficult to detect. Silver coins of the Sabaeans, however, are abundant, and a drug on the numismatic market.

What do these objects so far found tell us? Their surface message is clear. The kingdoms of southern Arabia, like that of the Nabataeans farther north, were in contact with the entire ancient world, from Rome to India and perhaps beyond. Objects of Roman, Greek, Egyptian, Mesopotamian, and Indian manufacture abound. Scarabs, amulets, bronze statues in the Roman manner, dragon-feet, and grape-bunch ornamentation in the Syrian and Byzantine manner, and Grecian columns all witness the especial linkage of this region with the Mediterranean. The names of gods monotonously repeated, the abundance of seated votive idols and ex votos, from phalli to oxen, indicate a devotion to religion and a belief in divine cures. Animals figurines show humpless cattle of the long-horned variety, like those of Hottentot and Galla, dromedaries, horses, ibexes, and gazelles.

Bronze is the common metal, iron rare; gold and silver are not scarce. Microlithic flakes of ornamental greenish stone and of obsidian were apparently used as cutting tools and as arrowheads, along with metal. Palettes indicate the great use of mineral cosmetics, as in pre-dynastic Egypt. Statuettes and bas-reliefs show the skirt or breech clout to be the common costume. The sculptural level in purely native art is not high enough to give us an accurate idea of the racial types present, except that the people were undoubtedly white, had prominent noses, and that the men wore beards. There is no reason to suppose that they were any different racially from the Mediterranean Yemeni highlanders of today.

Without question a careful study of authentic South Arabian archaeological specimens, even though removed from their contexts, as all those available are, could do much to solve the problem of the contacts and influences of this civilization. But such a study is yet to be made. From the inscriptions, and from classical and Arabic documents, we may build a second picture—that of the ethnography of these kingdoms; their boundaries in time and space, their social structures, their religious practices, and their economic life. With the aid of the prodigious scholarship of Nielsen and his associates, we will proceed to discuss these in brief.

It cannot yet be determined with any accuracy when the South Arabian kingdoms were first established. It is known, however, that Ma'an was probably the oldest, with Kataban perhaps nearly as old, while the Sabaean kingdom was, relatively speaking, young. The history of southern Arabia, as an important center of civilization, may have started, however, as early as 1300 B.C. and it continued until the time of Mohammed. A more conservative, but otherwise in no way preferable, date is 900 B.C. Whichever or whatever date one accepts, there can be no doubt that this cultural emergence was preceded by centuries of preliterate, in a sense pre-dynastic, agricultural civilization.

At some chronological point between the two dates mentioned, southern Arabia came into prominence as a highly civilized agricultural region, flourishing near the source of the incense trade route, which went up from the Hadhramaut around the western edge of the Empty Quarter to Mekka, Medina, and the ports of the eastern Mediterranean. It also served as the principal or only route by which goods from India were transshipped and carried overland. This trade position was highly artificial and depended almost wholly upon the suppression of the sea route up the Red Sea. When this was opened, in the second century A.D., the kingdoms of southern Arabia fell, and the country lost its importance to the world.

Of the four kingdoms, Hadhramaut alone produced incense, which also came from Dhofar farther east. The other three lay on the trade route and served as carriers, thereby collecting their "cuts" from the rich trade profits. A tear of incense resin, of negligible value on the tree, had been doubled and redoubled many times in price before it reached the Mediterranean. This ancient racketeering was based upon two sound economic principles, as valid now as then: the first, that of the monopoly, and the second, that of bought protection, in which the Arabs and desert people elsewhere have long been experts.

The Minaean kingdom, which was apparently the oldest, had passed its period of efflorescence before the Sabaeans began. It was also the northernmost, located in the Jauf and Nejran, with Maᶜan its main city. Nielsen believes that the basic elements of this civilization came from the coastal strip along the northern Persian Gulf, which the Arabs call Bahrain, and the Babylonians called MAGAN. According to Nielsen, MA'AN =MAGAN, with the 'ain substituted for the Babylonian G.

There were twenty Minaean kings, covering, in their combined reigns, a period of at least six hundred years. The older estimate would place the Minaean period from 1300 to 700 B.C.; the younger, from 900 to 300. If the alphabetic inscriptions from Ma'an go back to the oldest period, then the younger dating is the more likely, since, in the Sinai region and northern Arabia, alphabetic writing does not antedate the first millennium. The age of the Katabanians is also in doubt, but in all probability their kingdom was roughly contemporaneous with that of the Mineans. At what time Hadhramaut changed from a trade depot to a kingdom is not known.

The Sabaeans appear toward the end of the Minaean reign, perhaps, as Nielsen suggests, from the northern Arabian Jauf. They were perhaps also camel nomads, who carried the trade for the Minaeans, and who, later having decided to take their share of the business directly, established a domain in the south, grafting themselves on the northern portion of what had been Katabanian territory. There are two Sabaean periods: the earlier, called the MUKARRIB period, in which the king bore the title *mukarrib*, which indicated a primarily priestly office, and a later, in which he is called MALIK, the common Semitic word for King. A parallel transition took place in Kataban. The exact dates of these two periods are unknown, depending on a floating correlation. For the first Nielsen offers 1115–815 B.C., 950–650 B.C., and 815–510 B.C., of which he prefers the middle one. This, of course, goes with the early dating for the Minaeans.

The most important Mukarrib of Saba was Kariba-Ilu (the Priest of the God Il), who killed four thousand men in a war against Kataban, then turned on Ma'an and killed forty-five thousand, while taking sixty-three thousand prisoners and thirty-one thousand head of cattle. At the same time his army laid the Nejran country waste, destroying the Minaeans forever. Two Assyrian inscriptions, dated 715 and 685 B.C., respectively, serve to locate this Kariba-Ilu accurately in time. He gave presents to King Sargon of Assyria, although he was in no sense a vassal of the latter monarch. The difficulty in pinning the entire chronology to him is that there were several kings named Kariba-Ilu, and it is not yet known which one of them was the great conqueror and Sargon's friend.

At any rate, this Mukarrib period was the period of rise and efflorescence for the Sabaeans. They established themselves definitely as the principal people in southern Arabia; for after destroying the Minaeans and crippling the Katabanians and Hadhramautis, they turned to offer these two latter peace and alliance, which must have implied a Sabaean hegemony. The material high point of this period was the erection of the great dam at Marib, which provided irrigation water for the whole section.

From about 650 to 115 B.C., according to Nielsen's correlation, the Sabaeans continued to be the dominant people in the incense and Indian trades. This was the MALIK period. In 115 B.C. their nation became the dual kingdom of Saba and Dhu Raidan, with rival families arising; the Hamdanis, of whom there is still an entire tribe in Yemen, and the Himyarites, who were only a single noble family, although their name has erroneously been preserved as the title of the whole South Arabian civilization. The Hamdanis were centered at Marib, the Himyarites at Dhu Raidan. From 115 B.C. to 270 A.D. these two families jockeyed each other about in their struggle for exclusive power.

The later history of southern Arabia, until the arrival of Islam, is relatively well known. In 24 B.C. Aelius Gallus led an expedition to conquer this whole section, known to the Romans as Arabia Felix, but the Romans never got there. Somewhere in the sands near the Nejran the majority of them perished, and those who survived at this point turned back. About 270 A.D. the Axumite Ethiopians conquered Arabia Felix and ruled it—they were Christians and set up bishops and bishoprics. But by 378 A.D., apparently, their rule had come to an end. The Axumites themselves were the descendants, in whole or in part, of earlier emigrants from the Hadhramaut, who had carried Semitic civilization to Ethiopia and there become Christianized.

In 449 and 450 A.D. the dam at Marib burst twice, washing out the valley and ruining agriculture, and at this time there must have been a mass exodus. Perhaps it was at this time that the region of Sana'a became the nucleus of Yemen. The later kings, who ruled before the bursting of the dam, were in many instances Jewish in religion, and the strong Jewish colony of Yemen had before then been founded. In 525 A.D. the Ethiopians returned, and in 570 A.D., the birth year of Mohammed, the Ethiopian viceroy Abraha, who ruled Yemen, organized an expedition, mounted on elephants, against Mekka. This expedition soon came to grief, however, and in the same year the Persians conquered the country. In 628 A.D. the last Persian governor became a Moslem, and Arabia Felix was ruled from Mekka. By the time of the establishment of Islam in Yemen, southern Arabia had lost its earlier importance. This was due to the breakup of the overland trade, caused chiefly by the establishment of ports along the coastal Tihama by the Ethiopians. Before this time we hear little of the coastal plain—it was ethnically a different country, as it is today.

About the political and social organization of the four southern Arabian states, we have sufficient information to permit the reconstruction of at least a plausible if striking system. Since each of the four was organized in essentially the same way, it will suffice to describe the functioning of the best known, Saba. Here society was graded and subdivided on two interlocking bases, kinship and inheritable rank. These divisions were formally expressed by the presence within the state of several parallel tribes and four graded classes. The tribe was both a kinship grouping and a geographical expression; each tribe except one was a completely parallel unit, which included members of the three lower classes, in approximately equivalent proportions. The one asymmetrical tribe possessed in addition the entire personnel of the highest class, small in number, and including the priest-king and his near kinsmen.

The state was named after the leading tribe, and the capital was situated in this tribe's territory. The king was the representative of godhead on earth, and the chief deity which he represented was the national god of the state, although each tribe kept its own tribal divinity as well. The leading tribe was concerned with the maintenance of the main temple and of shrines; thus, the leading tribe maintained its political ascendancy through a religious sanction.

Each tribe was bound to a certain section of land and was responsible for the agricultural success of this allotment. The members of the tribe were obliged to remain on this land and could not farm elsewhere—there was no freedom of movement from the agricultural and residential standpoint. For political purposes, the tribe was subdivided laterally into thirds or quarters, and tribes could be recombined arbitrarily for political purposes. In this way the genealogical solidarity of the tribe could be broken down and must eventually have become secondary to the geographical tie. This organization into tribes and sub-tribes made it easy for the government to levy armies and collect taxes, and also to provide for the poor.

Local landholders, belonging to the upper tribal class, were also war leaders and were responsible for the raising of corvées to execute public works, particularly irrigation projects, and to maintain the highway along which the precious frankincense traveled. Furthermore, these tribal leaders were charged with recruiting warriors and overseeing agriculture; for if any lands were neglected or poorly farmed, the tribal overlords were held responsible.

The three social classes, aside from the divine upper crust, are designated by the as yet vowelless words MŠWD, KSDN, and 'DMWT. For the sake of simplicity, we shall designate these by the numbers 2, 3, and 4, leaving number 1 for the royal caste. Number two was a privileged class of landowners, with the feudal rights mentioned earlier; number three formed the most numerous group, consisting of free landholders, the owners of small, individual properties, who provided the bulk of the working power. They were farmers, paid a land tax, did military service, and submitted themselves to the feudal authority of the noble families of the second class. Members of class number three were further subgraded into categories by occupation, since they apparently included in their numbers the skilful artisans responsible for the high level of South Arabian material culture. If the modern parallel in Yemenite society reflects an earlier condition, then the farmers proper must have been superior socially to the artisans. The members of class number four were landless serfs, without political freedom. It is not known whether or not they fitted into the genealogical scheme upon which the tribal structure was erected.

An officer called KEBIR, in Greek *πρεσβύτερος*, presided over each tribe as head. The name itself implies that he was originally an elder, and that his position was determined by family precedence. His office was partly priestly, perhaps in the earlier stages of South Arabian social evolution largely so. It was he who brought sacrifices to the tribal temple and offered them to the tribal god.

Besides the lands governed by the tribal princes, there were crown lands governed directly by the king, and the occupants of these territories paid him taxes and military services. Presumably, these were the lands occupied by members of his own tribe. Much of the land also belonged to the temple; on it were priestly colleges, each with its *Kebir*. Thus, the prototype of the modern *zawiya* and its *sheikh* or *faḳiḥ* existed in pre-Islamic Saba. Every member of society, of whatever class, was obliged to do some work on the temple lands, and the gods were offered sacrifices, ex votos, and the tithes of all produce. The temples themselves were built with money given or bequeathed as offerings to wipe away specific sins committed by the donors.

The dual system of national partitionment, vertically into tribes and horizontally into classes, produced a state held together by religious sanction and by a specialized common economic purpose. Exactly how the caravans were organized, and who had control of the road taxes, we do not yet know, but the technique must have fitted into the system already described.

One can find a number of parallels to this tightly integrated and overtly stratified form of organization, in various parts of the world. The Inca system in Peru was basically similar, and that of the Aztecs was, at the time of Cortez, assuming a similar form, while the germs of such a system may be found in the tribal organization of the Muskhogean peoples of the southeastern United States. In the Old World, the Sumerian and Babylonian systems were not radically dissimilar. In Egypt the divinity of the king and the rôle of the nomes and nomarchs might be considered parallel. The caste system, with occupational segregation, has its parallels in India, and may there go back to the time of the Indus Valley civilizations. Thus the technical perfection of the South Arabian state, as exemplified by Saba, is not surprising, and its form relates it to the whole string of civilized communities reaching from the Nile to the Indus.

But like all other systems, no matter how perfectly adjusted, it was susceptible to change. As the Sabaean power grew through military conquest, the importance of the military element naturally increased. A sub-caste, called by the consonantal sequence 'KHMS, arose from the middle class, to parallel the *Kshatrias* in India; this was a strong military caste, which came in later periods to cut across tribal lines, and developed into a strongly unified group which wielded great political power. Its rise was perhaps comparable to that of the Nazi party in modern Germany, whose beginning was both middle class and tinged with military concepts. Needless to say, the rise of this fascist military class was entirely a Sabaean phenomenon; the power and initiative of Minaeans and Katabanians had declined long before its inception, and we know too little about the kingdom of Hadhramaut to make comparisons in that quarter.

The Katabanians, as a matter of fact, were more democratically governed than the Sabaeans, for each tribe had a council or assembly of landowners; this was distinct from the parallel council of noblemen; thus, the Katabanians had a bicameral parliamentary government, with a House of Lords and a House of Commons, with the king in the supreme position, over both. This system may well have been the early political formula of all of the South Arabian states, lasting through the Mukarrib period in Saba, and replaced during the Malik period by the feudal system above outlined, eventually to be thrust in turn into the shade by the rise of the military caste, and of the rival warring families of Himyar and Hamdan.

The religion of these southern Arabian states, so intimately entwined with the social and political structure, is not easy to reconstruct. Moslems are notoriously loath to preserve traditions of earlier paganism and like to garble what pre-Islamic history they permit to survive in anachronistic Islamic terms. Our religious sources, then, are confined to the body of inscriptions so far published, and a few superficial Greek observations. Although to competent Arabic scholars the reading of the southern Semitic inscriptions is not difficult, since the alphabet may be learned in a few hours, and the grammar and vocabulary are basically the same, the knowledge of this writing passed out of common circulation soon after the Islamic penetration brought a new Semitic speech and a new alphabet. In the tenth century Abu Mohammed el Hamdani could still read the old inscriptions, so we know that the knowledge had not, in his time, completely died. He wrote ten books about the olden times, of which only two survive.

The inscriptions consist largely of the names of gods, of which over a hundred are known. Many of them are attribute names, such as *Wadd*, love; *Sadik*, truth; and *Rahman*, the Compassionate, which passed over into Islamic terminology. Besides these are a number of animal names: the bull, the horse, the ibex, the snake. Others are kinship terms: father, paternal uncle, brother, mother, etc. Still others symbolize the omnipotence of the god: *Ba'al*, the ruler; and *Malik*, the king. Personal names of individual men are often of the *Slave of the Compassionate* type, the pre-Islamic prototype of 'Abd er-Rahman, and similar dedicatory terms. There is again a class of god names which indicate tribal affiliation, *the Protector of such and such a tribe*, or *paternal uncle of such and such a tribe*.

Needless to say, this multiplication of god names does not imply an extensive polytheism. All of the names, all of the gods, have been reduced to three: the Sun, the Moon, and the Venus Star. These are respectively represented in sculpture as a disc, a crescent, and an eight pointed star. Each of these three had many functions and attributes, each with a name, and the reduction of these to three is only exceeded by the Islamic heaping of all attribute names on a single divinity. Although there were but three gods, each might be worshipped separately in different aspects and under different names; thus the tribes were still able to possess personal divinities. The state god of the Mineans was *Wadd*, that of the Katabanians *'Amm*, that of the Habhramis *Sin*, and of the Sabaeans *Il Muḳah*. All were the moon.

There were no carved images of these three — the Semitic tabu against graven images, while by no means generally applicable, was in force in regard to the divinities themselves. What images we find are of people. These gods, however, had perches or resting places, in the form of crude stones, such as the Ka'aba itself. The sun was a woman, and the moon her husband. Once a month, at the time of conjunction, they had sexual intercourse; the stars are their children, and of these Venus is the most important. These stars eventually became angels; people and animals are also the children of the gods. Thus, a direct kinship connection exists between this divine trinity and mankind, with the head of the state acting as the symbol and concentration point of godhead in man.

Among the northern Semites the sun was the most important, as the promoter of fertility in vegetation; in southern Arabia, where the sun is too hot for comfort, and scorches and withers, the night is the time of coolness, and, in the moonlight, the time for travel and work. Nomads travel much at night, and the moon with its phases gives them their yardstick for measuring time. Thus, whereas the sun was the important god to the northern Semites, the moon was supreme among the southern groups, including not only the southern Arabian peoples, but also the pre-Islamic Arabs proper, who lived farther north in the peninsula.

The god *Il* or *Ilah* was originally a phase of the Moon God, but early in Arabian history the name became a general term for god, and it was this name that the Hebrews used prominently in their personal names, such as Emanu-el, Isra-el, etc., rather than the Ba'al of the northern Semites proper, which was the sun. Similarly, under Mohammed's tutelage, the relatively anonymous *Ilah* became *Al-Ilah*, The God, or Allah, the Supreme Being.

We know comparatively little about the technique of sacrifice employed in worshipping these divinities. The temple was the great economic nucleus of each tribal region, with sovereignty over its own grounds and fields, and it was ruled by its head priest with his troop of acolytes. To it came worshippers bearing votive offerings, little statuettes of gold in the forms of animals and men, brought to the god as instruments of supplication for future favors and as rewards for intervention in response to a previous oath. Models of arms and legs represent the divine curing of these limbs. A Greek source of the fifth century A.D. states that the Himyarites sacrificed the choicest of their war booty in the early morning light, to Venus in his rôle of Morning Star. The most important sacrificial victims were the handsome young boys who had been led to the temples as prisoners. The same source also informs us that other tribes worshipped Venus in the rôle of the Evening Star, an old man, and consequently rendered him old men in sacrifice.

It is possible, as Nielsen has done, to fit this whole religious system, as we now know it on the basis of incomplete evidence, into the general Semitic scheme, in which the four kingdoms of southern Arabia, and the northern Arabs as well, become the southern branch, and the Phoenicians, Babylonians, Assyrians, etc., the northern, with the Jews playing a mixed rôle. Whatever the findings of the learned school of southern Semitists in Denmark and Germany, we must, as these scholars would agree, still await excavation and a thorough stratigraphic and typological study of remains on the spot before any of the problems, religious or otherwise, which concern this civilization may be finally settled.

For the present purposes it must be considered sufficient to have presented the foregoing brief and unscholarly resumé of the work of Nielsen and his associates, as a summary of present knowledge of this intensely interesting and important archaeological problem. But even the short newspaper account of Philby's journey, and Hellfritz's uncritical hegira, as well as the observations made from the air by the French avaiators who, in 1935, flew over some as yet unidentified city, furnish their contributions, as does the equally uncritical inspection of the Imam's Museum made by the author.

We know now that the influence of the late classical world on the Sabaean kingdom cannot be overemphasized. Greeks or Byzantines must have been imported to the Sabaean state to make statues and carve stone. In earlier periods, Egyptian and Mesopotamian influences were equally important. The South Arabian cities were commercial metropoles of a cosmopolitan character, grafted on a simpler agricultural state, in which imported goods and styles probably were more important than those which were more nearly indigenous.

This cosmopolitan character is revealed by the nature of the objects found in Sabaean sites, many of which are too large to have been imported and must have been made by traveling workmen. Other things revealed by recent findings are Philby's discovery that Shabwa itself, although flanked by residential suburbs, was a small, walled-city nucleus, scarcely 300 to 350 yards square; in contradition to Pliny's statement that the city alone contained sixty temples. We now know for the first time that the salt deposits at Shabwa, which are still worked, formed a major incentive for the location of the city at that spot, and that prosaic salt shared the trade with the more romantic frankincense and myrrh. We also know that Marib is surrounded by submerged volcanic craters, which, Philby suggests, may have erupted at about the time of the destruction of Pompeii, thus weakening or breaking the famous dam. Through the diligence of this same explorer, we are introduced to a new city site, Ukhdud, in the Wady Nejran, a step farther north from the Minean center, and the seat of a bishopric in Christian times.

Much remains to be done. The field of southern Arabian archaeology is about to open. Let us hope that its miraculous preservation past the period of trial and error in archaeology elsewhere may permit slow and careful excavation by properly qualified persons, trained in adequate techniques. Let us further hope that the princes and kings who control these sites will continue to be well advised and will refuse permits to the sensational and the incompetent, following the policy so ably expressed by His Excellency Raghib Bey, Foreign Minister of Yemen, who feels that some important remains should be preserved for the archaeologists of the future, who will have developed techniques of obtaining scientific information unknown today.

THE IMAMATE OF YEMEN, A MODERN PRIESTLY KINGDOM[9]

The transition from Moon, Sun, and Venus worship to Islam, and from Sabaean speech and writing to Arabic, was not as drastic and complete a change as the Yemenites themselves may imagine. Although the trade upon which the southern Arabian states had been erected has never been revived since its collapse shortly before Islam, the more basic foundation of agriculture has continued, and the irrigated soil of Yemen, apart from the desert fringe, continues to feed a large population of farmers. These farmers are organized into regional tribes, under the control of a priestly king to whom, through his religious sanction, they continue to pay taxes. Furthermore, they are subject to his call in time of war and are levied as tribal contingents of soldiers. The social structure still includes stratified divisions, tacit for the most part rather than overt, in deference to the theoretical democracy of Islam which levels all believers in a ritual sense, as do less elaborate forms of Christianity.

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[9] Aside from my own notes, the chief sources for this section are Ansaldi, 1933, and Harris, 1893.

The Imam himself, the successor of a long line of holy ancestors, calls himself by the title *'amir el Mu'minin*, Commander of the Faithful, which is equivalent to Caliph. Since he is actually spiritual head of the Zaydi Shias only, his assumption of the caliphate is not widely accepted in the Moslem world. The Shia character of Yemenitic religion reflects a closer relationship with Iraq and Iran, in medieval times, than with Mekka. It erects an insuperable religious barrier between the Imam and his fellow king 'Abd el 'Aziz ibn Saud and creates difficulty between Yemenites and the inhabitants of the Sultanate of Lahej, in Aden territory, and the Hadhramis, who are all Sunnites. Since the basis of his control is descent from the Prophet and from Ali, the Imam's office is by nature hereditary. Theoretically, it should proceed by primogeniture, but in the past there have often been contests for the throne in which the most forceful or luckiest son has won. There is no indication that this practice will be discontinued.

During the Turkish regime the Imam's political authority was in abeyance, but his spiritual authority remained constant. He lived, at times, in Sana'a, but when at odds with the Turkish authorities he found it safer to lodge in a castle perched at the top of a mountain peak. From this elevation his spiritual guidance was able to radiate over the countryside. Since the departure of the Turks, the Imam has rebuilt his temporal authority, much on the style of the old Sabaean state. He reigns in his palace at Sana'a, across the street from the tombs of his ancestors and from the tomb, already built, which he will one day occupy. He consults daily with two ministers, one for internal affairs and war, the other for foreign affairs. Each minister has a council of notables to help him, but all decisions come ultimately before the Imam. It is a personal government which requires many interviews and consumes much of the Imam's time. His religious function receives external embodiment on Fridays, when he parades in state about the city, going to the cemetery and to his favorite mosque to lead the prayer. His zeal in the preservation of Islamic tabus and his insistence upon the observance of religious rites by the army and by his other subjects further reflect his direct religious control.

Like the ancient states, the Yemen is divided into districts, each of which has a governor, directly appointed by the Imam. This governor, called 'amil, is the direct head of the town or village in which he resides, and commands the levying of soldiers and of taxes in his district. For tax collecting he has a secretary, the *'amir eṣ-ṣanduk*, or Lord of the Box, to help him. Besides the governor and his staff, each city has also a *ḥakim*, or judge, appointed directly by the Imam, and completely independent of the governor. The judge, who in true Islamic spirit decides both civil and religious questions, is answerable to the Imam alone and serves as a curb on the despotism of the governor.

Within each district the true social unit of population is the tribe. Some of these go back, at least in name, to pre-Islamic times. The great tribe of Hamdan, important in late Sabaean history, is still intact, as are Khaulan and others of lesser renown. Each of these tribes has its own land and lives in its own castles, some of which may well be older than the present religious order. The tribe is a collection of families related by blood, a unit in dress, in traditions, and in manner of living. The tribe symbolizes its unity by taking, in many cases, the name of some ancestral chief as its own. The tribe, as with other Arabs, is patrilineal and endogamous. The usual right of the *ibn el 'amm*, or paternal first cousin, to a young woman's hand, is in force here.

The leader of a tribe is its *sheikh*, whose office is generally hereditary, preferably by primogeniture. He assumes the care of the collective interests of his people and judges disputes within the tribe. Disputes of a serious character, however, may be taken before a *qadhi*, or judge, of whom there is usually at least one residing within each tribe. The qadhi has a religious sanction and is a spiritual office parallel to the sheikh himself. The qadhi usually has a different genealogical origin from the tribesmen as a whole, being a *sayyid*, or descendant of the Prophet, through Hasan.[10] It is likely that this separate judgeship is an Islamic innovation.

At the death of the tribal sheikh, the notables of the tribe assemble to choose his successor from among his sons or near relatives. The election is normally confirmed by the Imam. The sheikh collects taxes from his tribe for the ᶜamil of the district, who is the superior officer of all the sheikhs living in the country about his residential city. Below the tribal sheikh, who in distinction is called *sheikh el mashayikh*, or sheikh of sheikhs, are separate local sheikhs for each village, which is the geographical seat of a clan-like unit. The office of village sheikh is likewise hereditary.

The modern Yemenite system may without difficulty be shown to parallel the social organization of the Sabaeans. One would not expect it to be identical, for the modern Yemen is the composite remnant of several earlier states, adapted by a shift in religion and by northern influences, as well as by the loss of the earlier caravan trade, to new conditions and to a lesser degree of world importance. The foreigners with their trade objects are gone, and the Yemen, through the policy of the Imam, cultivates isolation. Yet there is a brisk market for foreign cloth, for kerosene, and for armaments. The Yemen is, despite her isolation, in intimate trade contact with the rest of the world. The principal commodity with which she pays for these goods is coffee.

Returning to the parallel between modern Yemenite society and that of ancient Saba, we find that the topmost class, that of the divine king and his relatives, is occupied by the Imam and his immediate privileged kinfolk, who hold, for the most part, the high positions of ministers, judges, and governors. Owing to their religious sanction they are appointed with especial frequency as heads of mosques and other religious institutions. In this class must be included the group of sayyids as a whole. By and large, class number one has been replaced, in Yemen society, by new people—descendants of the Prophet coming from northern Arabia.

Class number two of Sabaean society, the MṢWD, may perhaps be identified with the hereditary sheikhs, the landowners, and deputy tax collectors. The third class, the KSDN is, of course, the body of free farmers who are the poorer relatives of these sheikhs, and who comprise the great mass of the population. It may deserve mention at this point that the Arabian city preserves the tribal organization of the country; that different wards represent tribal and clan entities, and have their local officers. In this way the Beni Qoreish, Mohammed's tribe, was one of the local groups in Mekka. City dwellers of the third and largest class go outside the walls to do their tilling, or work within as merchants and carriers.

The lower stratum of the third class, that which was in Saba divided laterally into occupational castes, is now recognizable in the guise of the Beni Khoms, a numerous group of artisans, confined largely to the towns, who are considered social inferiors, and with whose daughters respectable farming people and city men alike refuse to contract marriages. They are called Beni Khoms (Sons of the Five) because they belong traditionally to five special trades: those of bloodletter, barber, bath attendant, butcher, and tanner. To these five may be added, however, cobbler, dyer, weaver, potter, oil seller, seller of onions and leeks, coffee maker at the caravanserai, and wandering minstrel.

The basis of the degradation of this class of men lies in the reluctance of the Arab of high station to be seen performing any money-making or professional act in public. In other Islamic countries, and perhaps in the Yemen as well, this group includes public criers, weighers and measurers in markets, and drum beaters who announce the hours of fasting during Ramadhan. It is the Semitic sense of shame at publicity, an ethnic pudor which colors many of their habits and actions. It includes the feeling that manual labor, other than agriculture, is a servile and menial thing.

Among Hamitic peoples of East and North Africa it has many parallels—the Hamites despise butchers, tanners, hunters of wild game, metal workers, announcers, and artisans of all kinds. Among pastoral nomads of both Semitic and Hamitic speech, agriculture itself becomes ignoble, but this attitude has not, naturally enough penetrated the territory of those Semites and Berbers who have been farmers for millennia.

Each of the trade castes of the Beni Khoms has its own sheikh, who represents them and takes care of their interests. The Beni Khoms, as a whole, are forbidden to wear silk, to display any luxury of dress, or to wear ornamental daggers. It would also be unseemly for one of them to mount a horse. The Beni Khoms, therefore, assume the poverty of appearance and demeanor of inferior people, comparable to that assumed by outcasts and tribute payers in the nomadic north. People of higher station affect a distrust of the Beni Khoms, and many proverbs make this attitude clear. "Keep away from the Beni Khoms, and you keep away from trouble," is the general sense. Needless to say, this Beni Khoms group is endogamous.

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[10] Descendants of his brother, Hosein, are called *shorfa*, or *ashraf*, sing. *sherif*. The sherifs are common in North Africa and the Hedjaz; sayyids in southern Arabia and Iran.

The fourth and lowest class of the Sabaeans, the 'DMWT, is not completely represented in the Yemen as a whole, although a corresponding class does exist today. This is the group called variously *khadam* (workers), or *Hojeri*, a word implying only the position of this group. The Hojeris are found mostly in southern Yemen, in the region from Dhamar southward, in the mountain escarpment country, and on the coast. They are usually Negroid in appearance, although this is not always true. They are landless laborers without political rights, despised and degraded; normal Yemenites do not as a rule associate with them on a basis of equality. They are not, however, exempt from military service, at least in modern times; a number of them appeared in the levies sent to the author's house in Sana'a for anthropometric examination. In each case the soldiers with them made it abundantly clear that their companion was a person of low class, and there was some repugnance at the idea of hojeris and freemen being measured with the same instruments.

Some of these hojeris, in the escarpment country, present a startlingly primitive appearance, when met in their home environment, for these poor outcasts live in caves, the front walls of which are sometimes built up slightly by low walls of brush. The inevitable fire is always burning at the very front, and lean dogs and naked babies lying about in the sun outside give one the feeling of having broken in unwittingly upon an intimate Palaeolithic scene.

It is impossible at the moment to determine exactly what the origin of the hojeris may be. Some are undoubtedly the descendants of African slaves. Some may be, as the local legend insists, descendants of the conquering Abyssinians in the days immediately before the advent of Islam. Others may be descendants of an early ethnic strain comparable to that of the aborigines of the Hadhramaut and Dhofar. Most likely of all, all three of these strains, and yet others, may be inextricably blended in their persons.

Slaves as such, proper Africans, are almost unknown on the plateau. In the city of Sana'a they are exceedingly rare, and owned by but a few extremely wealthy families. In the southern Yemen they are somewhat more common, and on the coast they and their emancipated descendants are very numerous indeed. The coastal Yemen is largely a Negroid country; the plateau is for all practical purposes entirely a white man's territory.

So much for the social stratification of the modern Yemenites. In general, the fourfold division of ancient Saba is repeated, with modern variations. But there is today in the Yemen an entirely separate class, despised in a sense and yet wholly apart from the rest—that of the Jews. The Jews are no new people in the Yemen. They were exceedingly numerous there before Islam, and some of the Sabaean kings were Jewish in religion. At the time of wholesale conversion, the Christian element in the population wholly disappeared, and the Jewish body diminished in numbers, but managed with curious persistence to survive.

Despite restrictions and difficulties, the Jews in the Yemen have never been actively persecuted. They fill their proper niche in the social structure, and the benefits of their presence to the country have been tacitly recognized. For this reason the cities of Yemen in the centuries after the inception of Islam served as havens for Jews expelled from other Islamic countries, notably from the Hejaz and Nejd, and from across the Persian Gulf. At present the tide has turned, and many of the Yemenitic Jews are anxious to move to Palestine. To Jewish scholars, the Yemenite colony is a matter of intense interest; from the Yemen have turned up, from time to time, rare Hebrew manuscripts officially lost, and others important and unheard of. The Hebrew spoken by the Yemenites, their religious practices, and their general ethnology are extremely valuable to the student interested in reconstructing the Judaic past.

Most of the Jews live in the cities, and especially in Sana'a, where they occupy a special suburb connected to the main city by walls. These city Jews are merchants and artisans, plying the trades of mason, plasterer, carpenter, metal worker, and jeweler. They own the best shops, have charge of the importing of manufactured goods from abroad, and control most of the financial business. Many of them are wealthy, but they are subject to heavy taxation. Like the Beni Khoms, to whom they may be compared in occupation and, from the Moslem viewpoint, lack of shame, they are subject to numerous restrictions governing their behavior. They are forbidden to speak loudly before a Moslem, to discuss religion or religious laws with one, to mount a horse, to bear weapons, or to wear rich garments. They must wear the traditional gabardine and black cap, except on Saturdays when they don white cloaks and red tarbushes. They have, however, certain privileges to compensate for these disabilities. Weaponless, they are not required to fight. None is levied in the army. A Jew's body is relatively safe from serious assault. He may be threatened, but will rarely be struck. He may be cursed, but he will not be killed.

Another privilege, and one of great importance to the Jews, is that of distilling their own brandy and making their own wine. The Islamic prohibition of alcohol does not apply to them, and they are free to enjoy the warmth of the vine as they choose. This freedom, however, lends itself to other purposes. Bibulous Moslems come to the houses of their favorite Jews to imbibe in secret; and this practice insures the Jew at least one champion, in time of need, in the Moslem world. Alcohol forms one more bond, and an important one, to strengthen the solidarity between Moslem and Jew.

Politically, the Jews likewise fall under the common South Arabian principle of divine government, the blending of the spiritual and temporal spheres. They are ruled internally by a chief rabbi, who is answerable to the Imam. This rabbinical rule is not absolute, however, but has its safety-valve; a Jew who feels himself abused by his own people can appeal to a Moslem *qadhi* especially appointed for this purpose by the Imam. Like their forebears in the book of Genesis, the Yemenitic Jews are polygynous, and like their Arab neighbors, they are addicted to the practice of magic. The Yemenite Jew is accessible to Christian visitors while Moslems are not, for the Imam sends his Christian guests to live in the Jewish town. A good study of these people could be easily made, and is much needed.

Beside the city Jews there are others who live in the country and who wear farmer's clothing, of the traditional Jewish black. These rustic Hebrews till the soil, and form separate agricultural communities parallel to the Moslem clans and villages. Like the city Jews, they have the right to own landed property. These farming Jews seem different in many respects from their brethren in the city, and it may be that they represent, on the whole, a different group entirely and a different period of migration. This matter is, however, at the moment undetermined.

In the foregoing few pages, we have practically exhausted the current information on the social and political life of the inhabitants of Yemen. This information has, however, been sufficient to suggest that the continuity between the culture of ancient and modern Arabia Felix is great, and that the change brought about by the introduction of Islam was relatively slight. This principle is even more valid in regard to the material culture of the people, and especially to the pursuit which takes most of their time and effort—agriculture. The technique of highland farming had already reached its peak by the early days of the literate civilizations in that country, and nothing could supplant it short of the machine age, which in the Yemen is yet to appear.

Yemenite farming is of the type upon which Old World civilization as a whole is based—a mixed economy of cereal growth and animal husbandry, with vegetables and fruits as tasty additions. The whole countryside, from the bottom of the escarpment to the desert edge, is terraced, so that in places the traveler can count as many as three hundred terraces one above the other. All of this is worked, or has been worked, by the ox-drawn plough. Every two or three years the cultivated fields are scored with a long-shared plough, turning up furrows eighteen inches or more deep, and for each sowing they are worked with a smaller plough, and fertilized with manure. Harrowing is done with a wooden stone-drag studded on the bottom with flints, and smoothing with another which is smooth-bottomed. The water passes from one terrace to another partly by seepage and partly by flowing along carefully led irrigation ditches. On the relatively flat plateau country, it is stored in plaster-lined cisterns, some of which are reputed to have been built before Islam. There are also many deep wells, from which the water is drawn to high cisterns by pairs of camels walking down artificial slopes, to ease the weight of the leather buckets which they are hauling.

Land which is irrigated and manured yields three crops of wheat or barley a year, and the cultivation of grains is alternated with that of leguminous plants and other vegetables. Grains, lentils, and peas are the chief crops; but the turnip family is well represented, and maize as well. Medicinal herbs are grown in small gardens. Around the towns are small but well-tended orchards and vineyards, yielding sweet grapes, peaches, apricots, pomegranites, pears, apples, figs, and walnuts. Almonds are grown in the Jebel Luz (Almond Mountain) in the tribe of Khaulan.

Down on the coastal plain, much of the land is sandy and cannot be cultivated. The rest, which is alluvial, supports fields of durra and maize as principal crops, especially the former, which needs little water and grows to giant height. It furnishes not only food but also shelter, since from its long, heavy stalks are built the houses of the coastal people. Other crops of importance here are sesame, rice, tobacco, indigo, and cotton. Along the coast itself grow a few date palms and some dum palms.

The region of most varied agricultural production is the escarpment. Here in the folds of the mountain grow tropical fruits, bananas, date palms, and mangoes, as well as acacias which yield gum arabic. Coffee, however, is the crop which makes this region distinctive, and which most clearly separates modern Yemenitic agriculture from its Sabaean prototype. It grows only on the escarpment, in narrow terraces from 3,000 to 7,500 feet in altitude. It is limited to the zone of irrigation, from the mountains behind Hodeida northward. The trees grow 12 to 15 feet high, and in the same terraces between the trees are planted *qat* bushes, of which more will be said later, and bananas. These species are planted with the coffee not so much to save terrace space as to shade the coffee trees, in the earlier part of their life, from the direct rays of the sun.

The coffee trees are propagated by seeding, slipping, and grafting, and they bear after three years. When the berries are red, the farmers pick them and dry them on their roofs, and then carry them down to Hodeida, where they are exported by a number of English and other firms. The bulk of them go to Boston and Liverpool, except for the naturally black beans, which find a market in Marseilles. The coffee growing districts are graded into three qualities, with the best coming from Beni Mathar, south of a line drawn between Hodeida and Sana‘a, and the worst from Menakha, immediately to the north.

Although coffee grows wild in Abyssinia, and was first, presumably, used as a drink in that country, it was diffused to the world from Yemen. The Abyssinians may have brought it across the Red Sea, along with *qat*, in the sixth century A.D., but this is unlikely, since coffee is not mentioned in literature before the sixteenth century, when it was drunk by members of the Sufi brotherhood, as a stimulant and as a means of keeping awake during nocturnal ceremonies. Traditionally, the discovery of its use is attributed to a certain Sheikh Ali esh-Shadidi, who had traveled in Ethiopia. The learned sheikh, according to the story, was unable to sleep one night after drinking goat's milk. He found, upon investigation, that his goat had been eating coffee beans which had been accidentally roasted over a small fire lit under the tree; taking his cue from this, he made an infusion of roasted beans, and the world acquired coffee.

It is not the purpose of the present article to criticize this theory, but it does seem queer that coffee trees should have been brought from Ethiopia and planted for no good use, a thousand years before the beginning of coffee drinking. This objection, however, may conceivably be met by the simple statement that coffee in our sense is even now rarely drunk in the Yemen. The beans are too valuable, and are consecrated for export. The Yemenite instead boils the hulls and stems in a specially made, long-necked pot for about twenty minutes, adds a touch of cardamom, and, like the ancient Sabaeans, holds the cup over a lump of burning incense, or over cedar smoke, before filling it. The *qishr*, as the drink is called, has a mild, pleasant taste, closer to tea than to coffee; it is white and milky in appearance. The Yemenis are much addicted to it, and in the coffee zone drink it five or more times a day. It does not keep them awake, and is supposed to give resistance to fatigue. It is possible, therefore, that the coffee tree was first cultivated in the Yemen for *qishr*, and that coffee in our sense is but a commercialized by-product. On the other hand *qishr* may have been fostered purely by economy.

In the first decade of the sixteenth century coffee was introduced to Mekka; there great arguments arose between theologians as to whether it was *harram* or *hallal*, forbidden or permitted, since no mention of it appeared in the Koran or in the Hadith. The reactionaries won the first victory, and for a time it was prohibited as an intoxicant, but later it was permitted and became the vehicle of much of the ceremony of Islamic hospitality. In 1554 it appeared in Istanbul, and in 1591 was brought to Italy. The first so-styled coffee house in Europe opened in Venice in 1615. To the England of Samuel Johnson, coffee and coffee houses were a great vogue and a novelty.

Ethiopia's other great contribution to the economic botany of Yemen is *qat*, *Catha edulis*, an arbutus which yields, in the medium of its leaves and twigs, a dangerous and demoralizing drug. The bush grows as high as twenty feet, but is usually pruned down to ten feet or less. Its life is thirty years, and it can be eaten from the second year onward. Growing in the terraces with coffee, it spoils little space needed for the production of food, and it is heavily taxed, thus providing one of the Imam's chief sources of income.

Although the Imam forbids many things, such as music, silk, ornaments of pure gold, and other luxuries and pleasures, he encourages the use of this highly taxable narcotic. This encouragement takes the form of religious sanction. On Fridays it is distributed to the common soldiers of the army, who chew it before praying, and are then allowed a needed rest period afterward. Its use is calculated to encourage pious contemplation. Rich men and others who can find the money to buy it take it every day, in connection with tobacco smoke inhaled from narghilehs. However, the really important men, who have work to do, do not use it, since they know that it would impair their mental and physical powers. Groups of boon companions, drawn from the younger aristocratic set, take it in groups every afternoon, starting at about four P.M. and chewing well into the evening. The tobacco smoke seems an essential adjunct, and the addict calls frequently for the water bowl. These sessions last well into the evening, after which the addicts stumble home to an unpleasant bed.

The first effect of the drug is a feeling of heat and dryness, accompanied by a craving for water; the addict's temperature rises a few degrees, and his pulse increases. This stimulation of the metabolism lasts for an hour or two, and the drug stimulates at the same time the mind. People under the influence of *qat* think quickly, remember events especially well, and become very witty. Groups of addicts joke together rapidly and enjoy a pleasant intellectual session which may seem, to the non-addict, slightly silly, like the conversation of a group of moderately drunk cronies in our own civilization. The reaction to this drug, which is an alkaloid not very different from cocaine, is insomnia, followed by a hangover in the morning. Another bad effect is the loss of semen through urination, and the reduction of sexual strength. The drug produces anaesthesia of the stomach lining, which is not conducive to good digestion.

The most discouraging factor about this drug is that it does not incapacitate the addict during the time of his addicition. It does not produce hallucinations. A man under the influence of *qat* can go about his business and deal rationally with his fellows. Like nicotine, it does not seem to be a harmful drug. It is much worse than nicotine, however, in its ultimate effects, for it definitely reduces strength and vigor, and addicts who are deprived of it lose their ability to think clearly without it; they tremble and sweat, and are very difficult to cure. It is, very wisely, forbidden in Saudi Arabia, and a similar prohibition would do the Imam more good than the taxes which he derives from its sale. It is easy, however, to moralize about others. A Yemenite *qat*-chewer would be greatly disgusted at the sight of a group of Christians spending the evening at a bar. We do not know what vicious vegetable substance the ancient citizens of the South Arabian states took into their bodies to give them temporary release from a world of priests and wars and taxes, but we suspect that it was principally wine. The suppression of one vice does little but open the door for a worse one.

The domestic animals of the Yemenitic husbandmen are again the same as those herded and sacrificed by their pre-Islamic ancestors. The most important to the farmers are the hump-necked cattle, of Indian origin, which provide them with beef, milk, hides, and traction. This breed of cattle antedates Islam, but by how much we do not know. Humpless longhorns are depicted in sculpture, and the zebu has not yet invaded that model of inaccessibility, Socotra. Goats and fat-tailed sheep rival cattle as economic assets, and a special breed of black sheep is maintained for the sake of new-born and embryonic lambs' skins, most of which are exported, but some of which are made into brimless hats of the kalpack variety which, in the Yemen, grace the heads of Turks, Christians, and army officers.

Camels are not as common here as elsewhere in Arabia but still form the commonest carriers of burdens from coast to highland, and from city to city. In the Yemen all camels are packed; there is no riding except in the extreme south, and by an occasional boy. One special breed of giant size with black and dark reddish hair, unknown in the north, is greatly prized. The slim, swift *thelul* of the desert would be almost as much of a spectacle in Sana'a as in Boston. Horses, too, are rare in the Imam's country and are kept only by important and wealthy men. They are mounts of especially fine breeding and are imported from the Jauf region, northeast of Sana'a. In the Hadhramaut and the Aden country horses are practically unknown. Donkeys, on the other hand, are commonly bred and owned; they provide the second most common means of travel, for human feet are the commonest. A few mules are bred for packing, and one suspects that this was inspired mostly by the Turks. In the Yemen the usual Islamic absence of wheeled vehicles is noted; the only exceptions are the Imam's state carriage and a few automobiles.

Practically nothing is known about the dress of the ancient Sabaeans. Bas-reliefs show bearded men naked except for kilts which suspiciously resemble those worn by early Sumerians. Female statuettes are represented as naked, and thus assist us little. One can no more deduce from this that the ancient inhabitants of Yemen went largely nude, than one can make the same deduction, from similar source material, about the Greeks. The modern Yemenite dress may in certain regions and in certain social strata show a continuity with the past, but, on the whole, dress is one of the close correlates of Islam, and we may suppose that there was some change. Today one sees a great variety of costumes in the Yemen and by them one can tell regional and class differences with considerable ease.

On the coast, as well as in the towns of the plateau, the upper class dignitaries wear the conventional costume of Mekka, with its multiplicity of ankle-length shirts and kaftans, its tall red tarbush wound about with a white turban. There are probably less than two hundred men in the whole kingdom who dress in this fashion. The uppermost social horizon almost without exception can be detected by means of this garb. It is the universal uniform of sanctity and authority.

Farmers and sheikhs of the plateau commonly wear blue kilts of cotton, reaching to the knee or slightly below; and a blue shirt with wide sleeves, the cuffs of which are tied together behind the neck, so as to leave the arms partly bare and entirely free. This costume is completed by a blue turban, a leather belt, and a curved dagger. The most important element in the entire outfit is the dagger, without which the individual ceases to be a fully qualified, functioning citizen. Many so attired go barefoot; others scuff along in leather sandals with a variety of cross-strap toe attachments.

Although the costume described above is the ideal one, it is not always complete. In warm weather the more rustic often forego the shirt, leaving the upper part of the body bare, or wrapping a narrow haik around the shoulders and chest. In winter those who can wear warm overcoats of sheepskin with the woolen side in. Turbans, too, are far from universal. Country people let their hair grow long; city people and the members of certain tribes, such as Hamdan, have their heads shaved.

Women, on the plateau, wear a short blue shirt and baggy blue pantaloons, with narrow openings at the bottoms. On their heads they support huge straw sombreros with high crowns and wide brims, which hide their hair. To the plateau farmers, the European masculine costume, with its hats and trousers, seems indecently effeminate and supremely ridiculous and never fails to excite derision.

It is on the coast that the greatest variety of clothing is seen. The humid heat of this low-lying plain makes any form of garment uncomfortable, and the costume is consequently at its Islamic minimum. The wealthy burghers of Hodeida, and the aristocratic natives of the other towns, wear a white cotton night-shirt, and a small, perforated, can-shaped skullcap of embroidered white cotton, or, rarely, a red fez with a white turban. The sailors, stevedores, and many of the farmers wear only a sarong-like breech clout and an openwork straw fez. All of the people mentioned shave the head, and all but the farmers usually shave the face as well. The latter usually compromise by shaving all but the neck beard under the jaw line and chin.

The Zeranik tribesmen of the northern coast, indigenous to this region, wear small brown breech-clouts, just enough for modesty, and high conical dunce caps of brown straw on top of their luxuriant, unclipped, and highly oiled hair. As an adjunct to the conical cap they add, if they can, a wide ring of silver which sits on the hair like a halo.

Coastal women are more restrained by modesty than the men, and wear flimsy cotton jumpers, or approximations of the highland costume. Some however, are satisfied with a thin cotton nightdress. On the whole, the Yemenite women do not veil, except in the cities, as in Sana'a, where it is carried to its extreme. Here the women throw large pieces of flowered print cloth over their heads, so that they can dimly see where they are going but appear to the world outside the veil as amorphous and faintly gaudy ghosts.

In the field of religion itself, which one would suppose should bear the strongest Islamic imprint of all, survivals from pre-Islamic times are readily recognized. These survivals are found not so much in the more orthodox manifestations of religious worship, but in beliefs associated with the land—agricultural festivals—and in practices employed by hunters. The old and almost universal concept of the *genius loci* is particularly strong in the Yemen, but not as pronounced as in the Hadhramaut and regions farther east. This reverence for local spirits is strengthened by their personification in the form of jinns and shaitans, a manifest pre-Islamic heritage which pervades the entire Moslem religion.

In the Yemen many jinns live in springs, rocks, and trees, and some of these receive sacrifices. Near one village a jinn resides under a spring of pure cold water of which he is the owner. When the water dwindles, the villagers sacrifice a black ox to the jinn and the water becomes abundant. The use of black cattle as important sacrificial beasts is widespread and is an undoubted survival of earlier times. Black heifers are led through the streets of the villages, in seasonal fertility festivals, with flowers garlanded about their horns. Here we have an example of the cattle worship for fertility purposes which is recorded in the Bible as the worship of the golden calf, and images of cattle are abundant in early South Arabian collections as ex votos.

Jinns and shaitans, friendly to man as local spirits, at times also play a less benevolent rôle, since many forms of illnesses are held to be caused by demoniac possession. Illnesses attributed to jinns are divided into departmental categories; for example, earth jinns cause complaints of the stomach and bowels, since they enter these portions of the anatomy; sea jinns enter the head causing headaches, insomnia, and eye trouble; air jinns get into the heart, causing pains and great trouble with breathing, and often a loss of consciousness; sky jinns enter the nervous system, causing spasms and contractions of the limbs.

Possession by these jinns calls into play the services of practitioners who are, without doubt, the Islamic counterparts of primitive shamans. The caster out of demons is called *sheikh el jnun* and he, according to true shamanistic procedure, finds out whether or not a jinn is really present, and, if so, what kind of a jinn it may be. Having made a positive and specific diagnosis, he prepares his medicine and proceeds with his ritual. First he writes out a magical formula on paper, folds into it various spices and herbs, including saffron, marjoram, and harmal, and moistens it with rose water. He places this writing on the patient's forehead, and then makes a duplicate, which he burns with perfume under the patient's nose. The patient breathes this smoke, and the *Sheikh el jnun* recites a formula which, translated, means: "God is compassionate unto His servants."

The combination of the written formula and the recitation should be enough to drive forth the jinn, after whose expulsion the patient shows immediate signs of relief. There are many variants of this use of amulets for curative purposes. The power of the writing may enter the patient's body not only through the nose, but also through the digestive tract, since the writing is often soaked off, and the patient drinks the liquid in which the ink has been absorbed. The performance of this literary shamanism is not as easy as it sounds, for it is necessary for the *sheikh el jnun* to determine exactly what formula shall be written upon the paper. This requires much study, and the necessary knowledge is limited to a relatively small group of practitioners, who guard their secret with some jealousy.

There is one particular type of jinns, of special malignancy, called the Zar, which in Yemen are concentrated in the Tihama, and are sea jnun ruled by a sultan, 'Abd er-Rahman. The Zar possess people and force them to perform acts for which they are not responsible. Individuals so possessed dance, refuse to eat or drink, and cannot sleep; they are completely hysterical. Zar-possessed people may take live coals from a fire and eat them without showing any signs of burns. The relatives of a person possessed by a Zar call in an especially trained shaman called the *sheikh ez-Zar*, who brings with him a company of former patients.

This formation of a society of the cured has many parallels in American Indian culture, such as the Midewiwin of the Winnebago, and is not uncommon elsewhere. The *sheikh ez-Zar* first enters the room alone and demands from the Zar what he wants in return for leaving the victim. The Zar answers through the patient's mouth, apparently by ventriloquism, asking for a piece of jewelry, silk, or incense, or some other valuable commodity. At this point the practitioner retires to prepare the object named, and with it various kinds of incense; he then returns to the room of the patient with his little coterie. Having lit the incense brazier, he approaches the patient and touches him. Then the *sheikh ez-Zar* and his entire company sing and dance, and soon the patient joins them, but eventually falls to the earth in a trance-like condition, presumably caused by exhaustion. The *sheikh ez-Zar* then places the incense under the patient's nose, and makes him drink a cup of blood from a newly sacrificed kid, pronouncing a great invocation to all of the kings of the Jnun, to the sun, moon, and stars, and to the black rock. The Zar at this point departs; the victim heaves a loud sigh, which is the conventional sign that the demon has departed.

The implication of this ceremony is clear; not only does southern Arabia retain a cult of magical disease expulsion comparable to that found among the most primitive ethnic groups in the world, but it has also developed the society of the cured complex, which is even more widespread, and is characteristic of more advanced cultures than is disease expulsion alone. The invocations to the celestial bodies and to the black rock are clearly remnants of early Semitic beliefs.

There are, in the Yemen, besides these perpetrators of shamanism, members of religious brotherhoods who specialize in curing snake bites, and who are able to immunize themselves by taking gradually increasing potions of venom. The development of religious brotherhoods in general is intimately concerned, throughout the Islamic world, with the idea of the society of the cured as exemplified by the following of the *sheikh ez-Zar*, and is by no means localized in the Yemen. Islam, like Christianity and all other world religions, is an inseparable blend of high theological concepts with much that is basic and old. The Islam of the Yemen, like that of North Africa, is for the most part an earth cult connected with the concept of fertility. It is no wonder that the Moslems of the Nejd, to whom agriculture is of little importance, should have developed through their Wahabbite tenets a scorn for such, to them weak and effeminate, religious forms, and it likewise is not remarkable that there should be such a great cleavage between orthodox Islam, as propounded by Ibn Saud, and the more tolerant and more earthy variety condoned by his rival the Imam.

THE VEDDOID SURVIVALS; HADHRAMAUT, DHOFAR, AND SOCOTRA[11]

We have seen in the modern Imamate of Yemen an almost perfectly preserved medieval Moslem state, in which the civilization of Mekka and Baghdad is blended with that of Marib and Shabwa. As we shift our attention eastward, we find the same cultural amalgam in process of rapid diminution, and the emergence of an older cultural order. This is the culture of the small, ringlet-haired people, who paint their bodies blue and sleep in caves. Physically, they depart from the orthodox Mediterranean racial type of the highland Yemenis, since they are the westernmost representatives of a transitional white racial group, one which seems to form the racial substratum of the whole southern fringe of Asia. Their distinctive cultural peculiarities point in the same direction.

Of the three regions chosen for study in this section, Hadhramaut represents the maximum penetration of both Islamic and Sabaean (in the sense of the total literate pre-Islamic South Arabian civilization) cultures. In the Hadhramaut Arabic is spoken, rather than some form of Mahri-Socotran; in the Hadhramaut Moslem religious formalities are at least outwardly observed by the more respected element in the population. This population is divided into four well differentiated classes: wild tribes, Arabs proper, Sayyids, and slaves.

The members of the first named class, the so-called wild tribes or Bedawin, form the indigenous, the oldest recognizable element. They claim that they are descended from Ya'bub ibn Qaḥtan ibn Hud and have their shrine at Hud's tomb, whom they hold in greater reverence than the Prophet of Islam. From the genealogical standpoint, they consider themselves purer Arabs than the Yemenis and northerners. Some of them are sedentary, living in castles; others are purely nomadic camel people; while the majority are semi-sedentary, or seasonally nomadic, and follow the manner of life which the French in North Africa call *transhumant*, varying a little agriculture with pastoral nomadism. Their home is not the valley of Hadhramaut itself, but the highlands and smaller valleys, where they own large tracts of land.

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[11] For the Hadhramaut, the chief sources of information used are Van den Berg, 1886, and Van der Meulen and von Wissmann, 1932. For the Dhofar region, Thomas, 1932, and Bent, 1910. For Socotra, Bent, 1910.

Like the Yemenites, these Qaḥtanis never live in tents, for the house of hair is a northern Arab dwelling. The poor live in caves, the rich in houses, while all sleep under the stars while traveling, surrounded by a ring of camels. Most of these beasts are owned by the Bedawin, who monopolize the carrying trade. One wonders how great a part they may have played in the transport of goods over the frankincense route in the olden days. Today, at least, they form the most numerous element in the Hadhrami population and are very powerful, especially for their nuisance value, which they do not hesitate to exploit.

The second group listed, the so-called Arabs Proper, represents a later immigration in presumably post-Islamic times, although it may well have begun during the days of paganism. These non-indigenous Arabs are divided into tribes, such as Kathiri, Tamimi, Yafei, etc., and each claims an ancestor from the Yemen or from the north. Unlike the Bedawin they live in towns, and the towns are ruled by their tribal sultans. Their subsistence is derived mainly from agriculture conducted by slaves in the valley near the towns, and by remittances sent from Hadhrami merchants settled in Singapore and Batavia. Just as the Albanians from Korçë habitually go to Boston to sell fruit, and the Chinese of certain districts of Canton Province to America to wash clothing and purvey chow-mein, saving their profits and bringing home fortunes after a life of toil, so the Hadhrami merchants have brought much wealth to their valley from the East Indies. They have brought with them not only cash, but wives and ideas as well, so that Malay is heard in many of the Hadhramaut harems, and flat-faced children play in streets and gardens. Automobiles, taken apart at Mukalla and Shihr and packed over the hills on camels, are reassembled in Terim and Saiwun, and carry the Kathiri princes up and down the valley.

Besides these tribal agricultural landlords and their far-wandering merchant kinsmen, the Arab population of the towns includes a tribeless class of craftsman, small hawkers, and servants, corresponding to the Beni Khoms of the Yemen. These are reputed to be the descendants of individual immigrants from Medina, Iraq, and other places, and have no place in the genealogical structure.

The topmost group, in religious sanction as well as in social ranking, is that of the Sayyids, descendants of Hosein who live, a few families each, in the cities and most of the smaller towns. They are the religious leaders, and fulfill especially the rôle of censors; they are forever trying to suppress any heathen practices and to prevent innovations of suspicious religious value. They are the bulwarks of resistance against the entry of Christians and of European influences. These Sayyids, being descendants of the Prophet, never fight and are never attacked, and carry no weapons. Their bodies, like those of their kinsmen, the sherifs, are sacred, and they are imbued with a magical essence, a *baraka* of great force, which can be weakened, like the vital force of shamans in pagan societies, by the relaxing of religious vigilance and the breaking of tabus. The Sayyids can heal and bless by their touch, and cure by their spittle. Even the sultans must show them reverence, as medieval kings to the Pope, and they act as a balance wheel of stability to prevent the resurgence of paganism, and to keep intertribal war, in which the sultans and their followers are constantly indulging, from producing perpetual anarchy.

The fourth class is that of the slaves, which is a very numerous group. These are Negroes imported from Africa and the descendants of these Negroes, many of whom have been freed and form a large sub-class of debased agricultural laborers, familiar to the reader already as Hojeris. The slaves belong to, and the Hojeris are dependent upon, the rich Arab families living in the cities. They are well treated, work at agriculture and also at trades, and form the personal armies of the tribal sultans. Along the coast many are employed as fishermen and boatmen. To this class in recent times one must add many Somalis who have immigrated as laborers and have set up their own villages outside the towns.

The social stratification of the Hadhramaut is not quite the same as that of the Yemen, but there are certain fundamental parallels. The Sayyids, who enjoy temporal as well as spiritual power in the Yemen, are here spiritual only; the second class, the sheikhs of the Yemenitic tribes, are here elevated to the rank of independent sultans and are wealthy and sophisticated. As in Yemen and Saba, the third class, the most numerous one in the non-indigenous population, has again its tribal element and its tribeless division of trade castes; while the fourth, that of landless serfs, is represented by Hojeris, and by slaves.

So far the resemblance is a fair one, and the old South Arabian city state organization, while less faithfully reproduced than in the Yemen, may be said to exist. But there is a fifth element in the population which does not fit into this stratification at all: that of the native inhabitants, who, however others may regard them, consider themselves superior to sultans, slaves, merchants, and Hojeris alike, and who pay but dubious fealty to the Sayyids.

The houses that these Bedawin live in, like those of the valley Arabs as well, are of a general type familiar in Yemen. They are tall castles, built of well squared masonry, and rise to a height, in some instances, of ten or twelve stories, with two sets of windows to a floor. One of these castles houses a whole clan, or several related families, and their servants. A rich man usually devotes the whole top floor to his harem, the members of which have uninterrupted access to the roof. Within the houses there is a division on the basis of altitude; the preferred rooms are highest up, the despised ones nearest the ground, while the whole ground floor is devoted to the shelter of animals. The castles of the Hadhramaut are, on the whole, taller than those of the Yemen, and more imposing. In their architectural details they resemble very closely the giant mud castles, or *tigremts*, of the Moroccan Atlas Berbers.

Caves, occupied by some of the Hadhramaut Bedawin, are often enlarged into rock-cut chambers, with brush screens in front. When spending more than one night in the open, the nomads sometimes erect a flat roof of branches on a four-pole and crossbar frame, to keep out the noonday sun. They sleep by digging themselves into the powdery surface of the dusty ground, when they can find the proper type of earth; they dislike sand, and avoid sleeping on it if possible.

The costume of the Bedawin men is at striking variance with that of other Arabs, either of the north, of the Yemen, or of Oman; it forms one of their most faithful retentions of an earlier manner in defiance of Islam. They appear, in many instances, practically naked, since they wear but a narrow breech-clout, of the same brown color as their skin, and a braided leather thong of the same hue, twisted around their oily, luxuriant hair, which is worn long and tied up above into a topknot. To the end of this thong is often attached a small pair of tweezers and a silvery ear-spoon. Further accouterment includes a leather belt and the inevitable curved dagger, with space in the scabbard for a penknife.

In defiance of usual Arab custom, they pluck the beard from the whole front of the face, leaving it long under the chin and on the neck, and on the cheeks. These Bedawin usually dye their bodies blue with indigo, and smear their hair with coconut or other oil. The valley Arabs use indigo less commonly, as a rule, except as it seeps into the skin incidentally from their clothing, which consists of a blue kilt, a belt and dagger, and often a blue jacket or short shirt. Rich men and Sayyids adopt the Mekkan costume, as do wealthy Arabs nearly everywhere.

Whereas the Bedawin men stain their skins with indigo, their womenfolk use turmeric, thus creating a startling sex difference between blue men and bright yellow women. To this jaundiced base is added henna, and black, red, and green mineral paints. Body painting, and especially face painting, find their maximum incidence in the Islamic world in the valley of Hadhramaut. Cosmetics are at a premium, and one is able to reconstruct a picture of the gaudy lineaments of pre-Dynastic Egyptian women by inference, for paint mixing palettes were among the commonest of domestic articles in the earliest food-producing Egyptian times.

Since the basis of differentiation and the expression of personality among Hadhrami women lies in paint and also in jewelry, there is little distinction between social divisions in clothing. Islam dictates, after all, a certain degree of modesty, and all Hadhramaut women are at least decently covered. The usual costume is a pair of tight-legged trousers with a loose seat, and a short shirt. Heads may be covered with cloths, straw hats, or left bare. Veils are worn in the towns, seldom outside. The female costume, then, consists of an odd medley of ancient cosmetic profusion, with its roots in the primordial paint and feather complex of the primitive world, and the same perplexing trousers and straw hat combination which is almost certainly not ancient in the pre-Islamic sense. When and whence the South

Arabian women got their trousers is as great a mystery as the origin of the jodhpurs worn by men in Ethiopia.

East of the Wady Hadhramaut the Sabaean system of social stratification finally breaks down completely, for in the frankincense country itself the ancient South Arabian civilizations have left little imprint. Here one finds the maximum survival of the older order already observed among the Bedawin of the Hadhramaut country. This older order is a tribal system in which there is still to be seen a strong differentiation of social values, but erected upon a different basis. The entire stretch of country from beyond the mouth of the Wady Hadhramaut to the other side of Dhofar is occupied by two sets of people: those who are politically independent and warlike, belonging to closely integrated, internally democratic clans and tribes; and those who have renounced their freedom as the price of security, and who work for or pay tribute to members of the first group. The basis of social value here is therefore the same as in northern Arabia, where the free Aneyze lord it over servile and semi-servile tribes of herdsmen. In the Sahara the same situation may be seen in the contrast between the Tuareg nobles and their *imghaden.*

In this region the situation is complicated by the factor of language, for the Veddoid-looking aborigines, the chief conservators of an archaic cultural pattern which the Sabaean system never replaced, speak languages and dialects closely related to the pre-Islamic idioms of the great city states. One is forced to choose between two hypotheses: (1) that the old South Semitic languages spoken in the Hadhramaut and Yemen, and related by parenthood to the Semitic languages of Ethiopia, were endemic in the whole region west and south of the Empty Quarter, and that the city states arose among simpler peoples speaking these languages, including both the racially Mediterranean farmers of the Yemen and the Hadhramaut Valley, and the non-Mediterranean ringlet-haired aborigines further east, who were quite different in basic cultural ideas; (2) that the South Semitic languages in question were associated only with the racially Mediterranean, agricultural element, and that these languages diffused, during the time of the city states, if not earlier, among the aborigines to the east who had originally spoken some idiom of their own. In the same way Arabic later replaced old Hadhramauti as the language of the Hadhramaut Bedawin.

If one is forced to choose between these two, the second must almost certainly appear the more likely. Unfortunately, both must remain speculations. If we are to speculate further and choose a known linguistic stock for the aborigines, the most conservative selection would be Dravidian, of which the westernmost living example is the Brahui of Baluchistan. But this is worse than speculation; it is guesswork of the rankest order, which must not be taken with the slightest degree of seriousness, since today's speculation is tomorrow's dogma.

The South Arabian speakers are divided into two groups, those who speak Mahri or one of its dialects, and those who speak Shahari. We are indebted to Bertram Thomas for practically the entire body of our knowledge about these languages. According to his information, Mahri is spoken by the Mahra proper, an independent and hence superior tribe roaming the country north and west of the Gara Mountains, and south of the sandy portions of the Empty Quarter. Different but mutually comprehensible dialects of Mahri are spoken by servile or outcast tribes to the west of the Mahra proper, and by villages of Bautahari fishermen along the coast just east of Dhofar.

Shahari also has its speakers in both lordly and servile categories; the Shahara themselves, to whom the language is reputed to have first belonged, are a weak and disunited people, reduced to a few hundred individuals, who live in small groups among the Gara of the Gara Mountains, which rim Dhofar, and which are locally called Shahari Mountains, to indicate their association with this early ethnic remnant. The Shahari work for the Gara as woodchoppers and water carriers; the Gara themselves, their overlords, speak Shahari also, which they are reputed to have learned from their vassals. The Gara say that their real name is Hakalai, and that they came from the Hadhramaut, but that in an earlier wandering they had crossed an ocean.

The fertile plain of Dhofar serves as a radiation point for the speakers of these languages. On the plain itself, which is only about nine miles wide, lives a population of Negro slaves interspersed with Somalis, a caste of fishermen, and another of native farmers. These groups are controled by Omani government representatives from Muscat, and by a few locally settled Sayyids. The free tribesmen, who will have nothing to do with the government, despise the farmers and fishermen submitted to it, and consider them the equals of

Shahara. Up on the slopes of the Gara Mountains above the plain live the Gara themselves, with their cattle, for the tops of the mountains and the plateau behind are covered with grass which provides abundant cattle pasture. The seaward slopes of the mountain are well watered, and their valleys full of tropical jungle vegetation. Dhofar contains the last remnant of the former belt of tropical forest which once stretched from Africa to India, and the fauna collected in the Gara Mountains by Bertram Thomas is definitely Ethiopic, with links to southern India. The fauna of the denuded country on both sides and to the north is, by contrast, Palaearctic, and came down from the north with the post-pluvial desiccation.

Beyond the Gara country, in a semi-circle which reaches the sea at both horns, is a belt occupied by the Mahra, beyond whom, on the west, and approaching the valley of Hadhramaut, live various nomadic tribes of Arabic speakers. The nearest of these to the Mahra and the largest is Beit Kathir.

Thanks to the bravery and enterprise of Mabel and Theodore Bent in the 1890's, and of Bertram Thomas some thirty odd years later, it is possible to make a tentative summary of the main features of the culture of the least Arabized of these groups, the Gara. This tribe is divided into patrilineal clans, each of which is called *Bait such and such*, and each of which has a sheikh as leader. The head sheikh of the Gara tribe in the Bents' time was the sheikh of the Beit el Kathan clan. Thus, the Bents found a system of parallel clans, with one clan producing the supreme chief—which may be taken, perhaps, as the rudimentary prototype of the Sabaean system. The great sheikh, however, dresses like the others and is in no way distinguishable from his men except in his actions.

When the Bents visited the Gara country Sheikh Sehel, who was the paramount sheikh, conducted them on a tour of his domain, taking all of his subject sheikhs along as well. Since the Bents were his guests, he refused to take orders from them, but forced them to do what he wanted; owing to a natural linguistic difficulty, this situation was not clear to the Bents for some time. His guests entertained the idea that they had hired these men as guides, of whom Sehel was merely the head. The disillusionment came, however, both graphically and suddenly. The sheihks, much to the Bents' annoyance, used to sing and dance all night, and one night Sheikh Sehel tripped over a guy rope of the Bents' tent in the dark. Theodore Bent, greatly annoyed, stepped outside in his nightshirt and kicked Sheikh Sehel's backside. Nothing further happened until morning, when the sheikhs appeared in a group and politely said, in a manner that could not be misunderstood: "You have kicked our sheikh and now you must go back where you came from." The solidarity of the Gara nation, as illustrated by this touching camaraderie between its sheikhs, seems, by Thomas's day, to have broken down.

The clan, which is still the most important social or political unit greater than the family, pastures its cattle and goats together in one valley, and exacts communal compensation in revenge for bloodshed. The clan likewise has group rights to frankincense trees, and hence one may say that this clan solidarity is strong enough to have produced a certain degree of communism. But the caves in which the Gara live are privately owned, as are domestic animals. Hence within the clan structure the communal aspect is nicely tempered with the institution of private property.

In the dry season the Gara tribesmen pasture their herds of cattle in their own mountain valleys, living in their caves if near enough home, or if not, sleeping out under trees. In the rainy season, however, they come down to the plain of Dhofar for pasturage, and, while there, dwell in conical reed huts. These huts are beehive shape, seldom more than five feet in diameter, one for each separate family. In their caves the floors are thick with goat droppings, for they keep the kids in the inner recesses while the does are at pasture. The people live in the front, and in larger caves, occupied by several families, small huts of the type already mentioned are built inside for family privacy.

The main subsistence of the Gara is derived from their cattle, and in cattle they are, by Arabian standards, wealthy. Every man and woman owns some of them. A few Gara and Shahara possess more than one hundred; a rich man owns forty or more, and twenty ensures a moderate prosperity. Since theirs is a dairying complex, they keep only enough bull calves for stud, and kill and eat the others. They flay these calves carefully, and stuff their skins, for the mother cows to lick while milking; this ruse is also employed by the northern Arabian Bedawin with camels, and is widely used by most pastoral people.

If milk does not flow freely, the milker blows into the cow's vagina with his mouth, emptying several lungsfull, and at the same time rubbing the udder with his hand to feel the milk when it begins to swell. Here again is an ancient practice, known to the Mongols of Central Asia, and connecting the South Arabians with the Hottentot on one hand, and the Toda on the other. It is at least as ancient as the Sumerians. Like the camel milkers farther north, the Gara churn their butter in a skin slung from a wooden tripod, and butter is an important food, ointment, and medicine to them. It is also a tonic, in their way of thinking, for women fill a specially modeled small spouted pot with melted butter, lie down, insert the spout in a nostril, and then let the melted butter flow through the nasal passage. This, they believe, relieves headaches, makes the eyes bright, and the complexion clear. Butter which is not immediately consumed is boiled and converted into ghi.

Their social attitudes toward their cattle serve to place the Gara in a special niche among the dairymen of the world. In the first place, each cow has a female name, and these names are hereditary through the female line. Thus, an entirely female pedigree is kept, while the men themselves trace their genealogies through their fathers. This is exactly the same as the system by which the northern Arabs, also patrilineal, breed their mares. But there is another and more important aspect to this cattle culture, and that is the sex attitude expressed in the relationship between men and cows. The men do all the milking, and no woman may touch the udders of a cow, or of a she-camel, or goat. Women, who attend the grazing cattle, would defile and offend them if they were to attempt milking. Among the Mahra and Al Kathir, as well, this rule likewise applies to all milch animals, excepting the sheep, which women may milk. The Gara have no sheep.

The herd of cattle, among the Gara, is therefore sacred, and the widespread ancient idea of female contamination has been associated with he main source of Gara livelihood, their cattle. Although it is only natural for men to revere and urround with tabus their most important ecoomic possession, this particular expression of everence has a significant geographical setting which cannot have been due to chance. The Gara orm a connecting link between the Toda of ndia, with their sacred herds of buffalo, and the antu and Hamitic peoples of East Africa, with heir wealth of zebus. Both have the same sex attitude as the Gara, both consider their cattle sacred. The cattle complex of East Africa, with humped cattle, reached Africa by way of southern Arabia, and the cattle culture of the Gara represents an intermediate step on the road from the common source, which for zoölogical reasons must have been India.

The Gara, besides their cattle, breed a certain number of camels, not in the grassy plateau country or upland valleys, but in the wooded valleys nearer the plain. They concentrate not on females, as do the northern Arabs, but on males, and kill most of the newly-born does. The reason for this is that they breed these camels for transport purposes only, and not for milk. They use them in their seasonal migrations, to carry frankincense down to the coastal villages and to bring back sardines for cattle fodder. They keep a few females for breeders, but never saddle them.

The mountain men also keep goats, but will have nothing to do with sheep, and they carry this to the extent of refusing to eat mutton. This tabu is accompanied by a bird and egg prohibition; they show signs of distress and affront if offered fowl or eggs. Since the coastal people eat these birds and their products, this distaste provides a symbol of differentiation and of superiority for the Gara in their dealings with their despised lowland neighbors. The mountain people, furthermore, have no horses, no asses, and no dogs.

It might be profitable to pause at this point and examine the possible relationship between the animal husbandry of the Gara and of their subjects the Shahara, with that of other peoples of Arabia, especially since the lateral connections with India and East Africa are both reasonably clear. The cow forms the center of Gara economy. The Gara and the Shahara are pastoral rather than agricultural people. Now in pre-Islamic South Arabia, the civilization of the four great states was built upon the mixed economy of animal husbandry and plough agriculture with cereals. In this mixed economy the cow was the principal animal, and there was great reverence for this beast, as in India. This reverence is seen today not only in the Gara attitude, but also in the survival of black heifer worship in the Yemen. Hence it is reasonable to suppose that the cattle complex of the nomads east of the Hadhramaut was not completely alien to the agricultural civilization farther west, but that the two had much in common and blended into each other in the environmental borderlands. So a fact which the reader may have suspected for some time becomes likely, that these so-called Veddoids are not separated from the city-state farmers in airtight cultural compartments.

Let us reflect upon the relationship between the Gara cultural horizon, and that of the northern Arabian Bedawin, such as the Ruwala. At first glance there would seem to be little in common between the cattle-milking Gara in their breechclouts, and the trailing-robed riders of theluls. But if one grant for the moment that Arabian tradition is true, and that the Aneyze ancestors of the northern Arabian aristocrats came from the Yemen, and were, as Hogarth suggested and Lawrence agreed, not unaware of agriculture in their old home, then the following reconstruction may not seem too unlikely. A semi-agricultural people with a cattle culture related to that of the Gara, and a few camels for transport, moved northward owing to population pressure, desiccation, or both, and was forced to give up both cattle and farming. They shifted to the camel as the mainstay of life, and began breeding for females rather than males, since the male is economically less useful. They acquired horses from the north, and bred them as a symbol of wealth and prestige.

The whole symbolic rigmarole which they had formerly enacted in regard to their cattle, as symbols of prestige, was transferred to the horse, including the keeping of genealogies in the female line, the disassociation from women and from menials, and the idea that the horse is sacred and can do no ignoble work, such as carrying packs and drawing vehicles. Thus, the whole horse-camel complex of the northern Arabs, inexplicable in terms of cultural diffusion by way of Mesopotamia from the Central Asiatic plains, can be traced to a southern Arabian origin, and can be explained in a purely logical manner as a specialized offshoot of the southern, or Indian-African, cattle complex, as opposed to the northern or Irano-Scythian—Mongol. This explanation still rests, for its validity, upon Hogarth's assumption, and cannot be considered final until that assumption shall have been proved.

Let us return from theory to the simple exposition of Gara culture. Their food, as one would expect, consists principally of cattle products: milk, butter, and ghi, with meat as the next most important item. They preserve this meat for future use by cutting it in thin strips and drying it in the sun, like the jerkie of the American plains. In order to cook meat, they scrape the embers of a great fire over flat stones, and when the latter are hot, they broil on them the meat, fresh or dried, which has been cut in strips. They waste no edible parts of the animals, using both heads and intestines. Like East Africans or Abyssinians at a banquet, they gorge the meat down, cutting the pieces off in front of their teeth with knives. Their table manners, therefore, differ profoundly from those of Arabs more influenced by the civilizing force of Islam, while their cuisine is of an almost Australian simplicity.

Before concluding this discussion of Gara economics, we must not forget their virtual monopoly of what remains of the frankincense business. Dhofar was, in the olden days, the easternmost frankincense country, and the best. On the plain of Dhofar there are many ruins of factories and trading posts, and of at least one town, presumably an outpost of the Hadhramauti civilization. The Gara country, from which the frankincense came, still produces it in quantity, while the Mahri yield is thin and of inferior quality. Myrrh, which also grows in the Gara country, is less abundant, and can be told from the amber-colored frankincense by its reddish hue.

The frankincense trees, which grow between the altitudes of 2,000 and 2,500 feet on the edge of the summer rain belt, belong to the Gara by clans. Each clan has a private mark which it cuts on the tree, and ownership is jealously guarded. The Gara seldom harvest the gum themselves, however, but prefer to rent their groves to Kathiri and Somali pickers for one half the produce. The trees bear in their third or fourth year, and the collectors, at the beginning of the hot summer season, make small incisions in the lower branches. The sap, which oozes out slowly, hardens into tears, not unlike the gum on cherry-trees. After ten days or so the collectors pick these tears, and reopen the incisions.

This process is repeated over and over for the space of five months; then the tree dries out and refuses to yield, after which it is left for a season or two to recover. The tears, collected during the hot season, are stored in caves to harden during the rainy monsoon. The principal reason for this storage is not so much because the gum needs ageing as because it cannot be shipped during the rains. This is, after all, the season of the southwest Monsoon, when dhows are not sailing along the Dhofar coast. They must wait for milder weather and a fair wind to carry the frankincense to Aden. In this traffic the villagers of the coast act as middlemen, and these traders would prefer, no doubt, to let the Gara take the risk of the frankincense spoiling in the wet weather.

What has already been said of the clothing and accouterment of the Hadhramaut Bedawin applies with added emphasis to the Gara and to most of the other inhabitants of the Dhofar sector. The men wear the breech clout and hair thong, with sometimes a blue cloth tied over one shoulder, a leather cartridge belt, and a bracelet above the right elbow. Women's clothing, judging from photographs, consists of an open-sided belted nightgown, with a false sleeve effect attained by draping, and the head bare. According to the Bents, the Gara made bark-cloth from the silky fibres of the madder tree. If this is true, Dhofar forms a link between Africa and southern Asia in still another sense.

Boys shave their hair into a roach, which is cut off at circumcision, after which their locks are allowed to grow indefinitely; girls wear it shaved in sagittal ridges, with a forelock and a few plaits behind. One month after marriage a surgical operation takes place, for a sagittal strip of skin nearly half an inch wide is cut from the scalp to make a scar-tissue hair parting, over the mid-line of the skull. This parts the woman's hair finally and definitively in the middle, but the process, like most beauty treatments, is painful, and if infection sets in it is fatal. Afterwards the hair is allowed to grow without hindrance, and is braided.

Like the Hadhramias, the Gara women and others of the Dhofar region paint their faces in many colors. In all southern Arabia, but especially in this sector, face painting ceases to be a purely cosmetic practice, and assumes an overtly tribal and ceremonial character, comparable to the use of ochre and pipe clay among Andamanese and Australians, but closer in detail to the face painting of southern India, for, as in India, turmeric is the most important stain, and the single red spot on the forehead is characteristic.

The equipment of the Gara man, aside from his scanty attire, includes a carry-all bag slung under one arm by a neck cord, and his weapons. Women carry bags woven of reeds, to hold their kit. The weapons of the Gara man consist of a shield, made of wood or shark-skin, deeply excavated, with a knob or boss at the center, and this shield is used in times of repose as a stool. Then there is a machete-like iron sword, usually of imported metal, with a wooden handle, and sometimes a scabbard. The third weapon is the *ghatrif*, a hard wood throwing stick about three feet long, pointed at both ends, and looking, like the shield, strikingly Australian. The warrior hurls this *ghatrif* through the air at his enemy or quarry, holding the shield and the sword in the other hand; when he approaches closer he can rush in with the latter weapon. Firearms, of course, are not unknown, but at last notice they were still of the round-butted flintlock variety.

It has already, at an earlier point in this discourse, been suggested that the circumcision rites performed here are different from those usual among Moslems. Although the Gara girls suffer clitoridectomy at birth (and this is not required by Islam), the boys wait until the actual arrival of puberty for their genital mutilation. Among good Moslems the circumcision ceremony is performed upon infants, and is an individual family rite. Among the Gara it is done in groups, as among Australians and many other primitives.

The Gara boys, summoned for this ordeal, sit in the center of a circle, with men and women around them. On a rock on the center sits the boy whose turn it is to be circumcised, holding a blunt-edged sword in his hand, and this he throws in the air and catches as it falls. Before him stands an old man, the officiating surgeon, behind whom is placed an unveiled virgin, who should be the sister or cousin of the neophyte. She too holds a sword in her right hand, and she raises and lowers this vertically, slapping it, at the bottom of each stroke, on the palm of her left hand. The circumcisor now performs his grisly operation, and the boy runs bleeding in circles in front of the assembly, raising and lowering his sword in the same manner which the virgin employed, and showing no sign of pain in his facial expression. During this exhibition of manliness there is much singing, drumming, and rifle firing, and the women open the tops of their dresses to show the boys their breasts.

With the Mahra also a mildly licentuous element of female exhibitionism accompanies the ceremony, which was formerly held shortly before the boy's marriage. During the ceremony a dozen or so of the most attractive women parade, and the men who are watching declare which is the most beautiful. At each decision the female gallery, which is also watching, cries NO! until the whole field has been covered. One may object that this practice has no more ritual significance than an Atlantic City bathing beauty contest, but the beauty contest is not, in Atlantic City, linked with circumcision.

One must not read too much into these ceremonies, since the documentation of details is far from complete. There is without question an ordeal to show manhood; the slashing with swords on the part of the patient and a near female relative may be designed to rid the neighborhood of dangerous and invisible spirits, like the spirit-slashing of the Nicobarese and of Formosans; the firing of guns, as at Moslem weddings, may have the same purpose. The abandon of the otherwise modest women may be, in fact if not in theory, a further ordeal, or a dazzling glimpse to the newly initiated men of pleasures to come. In any case, the ceremony in its entirety and its feeling is very un-Moslem and forms one of the many links between the culture of these ringlet-haired people and the pre-Islamic, truly primitive world. Initiations of this sort, in their world distribution, are by no means universal, and place the Gara in a class with such varied peoples as the Australians, Ona, Papuans, Bushmen, and Liberian Negroes.

In marriage arrangements we find another of the not infrequent links which ties the Gara and their neighbors to the Arabs of the north. The betrothal takes place while the girl has not yet reached puberty, and the arrangement is made by the fathers of the couple. This marriage is contracted by preference, between the boy and his father's brother's daughter, according to the universal Arabian system. The price for a parallel cousin marriage of this type is cheaper than if the boy were to marry outside his larger family, and the fee demanded ranges from one cow to twenty. This difference in relative price reflects the feeling of communism in family property.

This marriage, since it is arranged by the parents and not by the interested couple, may be of short duration; and may in fact take the form of a ritual release of the girl from her family obligation. If the young man likes, she may obtain a divorce and marry a second husband of her own preference. Apparently, several consecutive marriages are usual, and polygyny, although recognized, is unusual.

Divorce involves, as one would expect, a property settlement; a man who dislikes his wife may send her home with half a cow's carcass as a present, but he forfeits his marriage price. If the wife is the one who wishes the divorce, she may leave at will, but is obliged to collect half of the marriage price from her relatives, and return it. This is not always easy, especially if the husband exercises his right, as her paternal first cousin, to hold out for an increase in the fee as the price of her departure. Such niggardliness is not esteemed, but it is the husband's privilege, which he may exercise especially if the woman has failed to bear him sons in a reasonable time.

When a man, without divorcing his older wife, marries a second and younger one, he gives the older one cattle equivalent to the marriage price of the second, to pacify her. In this and in other ways women acquire cattle, often in considerable numbers. The whole concept of women being equal, in a monetary sense, to cattle, when combined with the ritual incompatibility of these two female classes, bears in it more than the germ of the East African cattle complex.

Needless to say, cattle are slaughtered sacrificially at times of social importance, as at weddings. The women may not, however, cook the meat, nor prepare any food. It is woman's work to tend and graze the cattle, but not to milk them, to collect firewood, fetch water, make pottery, cut hay for the beds inside the cave, and to bear children.

When a man has died, two cows are sacrified over the grave on the burial day, the sacrificer saying, "See by this gift So-and-so the son-of-So-and-so." This formula is worded exactly like some of the inscriptions on Minaean and Sabaean memorial plaques. Three days after the burial the relatives kill a third cow, but the big sacrifice comes two or three months later. This is a veritable feast of the dead, comparable to the memorial sacrifice of a camel in northern Arabia; the heirs slaughter one half of the dead man's herd and offer portions of them in burnt sacrifice. This destruction has twenty as its limit, hence the very rich are favored over the poor. For a rich man, however, a camel and other animals may be offered as well.

This great sacrifice takes place not at the grave, but in front of the dead man's cave, and is attended by tribesmen from all the countryside. Fellow clansmen and tribesmen may eat their fill and take some meat home with them; strangers are fed on one cow especially prepared, and may not take other meat away. This ritual sacrifice and feast, as among other peoples who observe similar customs, settles the score of the living with the dead, and symbolizes the final erasure of his name from the roster of the social unit of which he was a member.

The inheritance of the rest of the estate left after this concluding hecatomb is divided, not according to Moslem law, but by a local traditional code. Creditors may claim but one-tenth of the estate, beyond that which has gone into their bellies; the rest is divided between widows, daughters, and sons, in a manner which seemingly ignores the Islamic rule that each male heir counts as two females.

The Gara refuse to submit to Islamic law, except that they may, upon rare occasion, resort to a coastal *qadhi*. The mountain law is, like our own, based on precedent, and its guiding principle is the *lex talionis*. The tribal law man, the judge, is called *Hauz*, and he may or may not be the same person as the tribal sheikh. Disputants come to him, and he renders judgments and dictates compensations. These usually involve either payment in cattle or the rendering of a similar wound. In one recorded instance, a man who had been shot through the leg while passing through the territory of a different tribe, blamed his escort, who belonged to the tribe of the offender, and was thus responsible. The escort was punished by having an iron skewer run through his own leg in the same place, after which a bullet was drawn through on a string.

This incident naturally leads to an explanation of the whole escort system, which is equally prevalent in the Hadhramaut, and is also characteristic of the northern Arabs, being a basic principle in the erection of their stratified social structure. Each tribe, such as the Gara, Mahra, Al Kathir, etc., is technically at war with each other, and often individual clans within the tribes are at war with other clans. A person who wishes to travel outside the territory of his own clan, or tribe, if it happens to be united in peace at the moment, must pay a fixed sum in advance to the head man of each political unit through which he desires to travel. In return for this payment, one or more members of the tribe or clan in question will accompany the traveler to assure his safety. The escort must be a well known person with some authority, who will be recognized and whose word will be accepted. If, in spite of this escort's presence and efforts, the traveler is killed or wounded, the protecting chief, and his group as a whole, are responsible. In the case outlined above the responsibility was placed on the guide himself.

In the Hadhramaut arrangements for travel are made in advance at the seaport with agents of the inland sultans; in the Dhofar sector one must halt at the tribal boundary to make arrangements, if this cannot be done earlier. Here not all tribes are willing to honor the escort system; according to Thomas, the Bautahara would let no strangers through until recent years.

This escort system, which functions on a cash basis in southern Arabia, is linked rather with the concept of hospitality and prestige in the North. Its southern aspect seems to have been ancient, for it is only on some such basis that the four great states of antiquity could have regulated the passage of the frankincense caravans along the incense road, and it was without doubt rivalry for the protection money so obtained that led to the wars between these states and the ultimate Sabaean supremacy. The payment of protection money is therefore an old Arabian concept, and one which was carried to the Straits of Gibraltar, where Tarifa exacted a similar toll by sea and gave his name to our somewhat different system of commercial extortion.

Among the Gara, murder comes high, and the price is theoretically five thousand Theresa dollars for a man. It would take a lifetime, at least, to pay this off, if a single man were to undertake it, and hence the tribe as a whole pays, with the murderer's clan and close relatives bearing the bulk of the burden. A Shahari, or a lowland slave, may be killed without trouble, for he has no clan to avenge him, and is not a tribesman, not an equal. He has no niche in the social structure and his loss will necessitate no readjustment. The payment of the blood money, however, seldom reaches the stage of completion before the development of a blood feud. Murder as a rule begets murder, and the clans of the Gara are actually divided against one another by blood grievances. These vendettas also exist between Gara clans and those of Mahra and Al Kathir, neither of whom acknowledge any central tribal authority. In feuds the tribesmen regard the Oman Government, their nominal overlord, as a clan or tribe, and any Gara man killed by government agents may therefore be avenged by the reciprocal murder of any other servant or agent, or even subject, of the government.

Among the tribesmen the complete independence of the individual clan or tribe is of paramount importance from the viewpoint of social prestige. A man who submits to governmental authority, such as that of Oman, ceases to be a man at all, and assumes the attitude of a serf. The whole pride and constancy of the tribal world crumbles and vanishes with submission, and the submitted man sees no benefit in survival. When the social structure is based on this concept of political freedom and self reliance, submission to an alien government is equivalent to destruction and demoralization of an irreparable order. That is why the northern Bedawin refused so utterly to pay tribute to the Turks before the war, and it is also the reason why the Riffians of northern Morocco, whose society is based on the same principle, resisted to the last man the attempt of the Spanish and French to relieve them of their freedom. Once conquered they lost the will to live and reproduce, and a suicidal despondency fell over the land. If conquering nations were to study the social structure of their prospective subjects before they attack them, they might find that some middle road which preserved the semblance of autonomy and left unimpaired that important quality of self respect might gain them much more profit in the end. But it is now nearly too late; the tribes above Dhofar are almost unique in the preservation of their freedom.

The elaborate rules of hospitality, which have made the name of the northern Arabians a byword for this virtue, are in the Dhofar country abbreviated or absent. Of all the elaborate mechanisms for protecting the fugitive and stranger which are enforced in the north, and in southern Arabia in certain instances, none, not even the stomach price nor the rule against killing a man in his sleep, apply. The only means of protection is that of the paid escort, which is none too sure.

The Arabian love for formality in salutations, however, is not absent, and the different greetings commonly used often reveal details of kinship and kinship behavior. A boy will greet a closely related female by kissing her left cheek, right cheek, left cheek, right temple, and then the top of her head. When men meet they touch hands; mere acquaintances rub the palms of their hands together and then kiss their fingertips; relatives join hands, rub noses, and kiss either cheek like French generals bestowing medals; then they light a small stone tobacco pipe, of which each man carries one, and have a puff together as an added detail of greeting. A man may touch a woman's hand, but if he squeezes or shakes it, he has been overintimate, and has, in fact, committed a blood offense.

The tobacco which these men smoke is of local cultivation, and the stone pipes are home-made. Women do not smoke, but take their tobacco in the form of snuff, while both sexes chew it with lime, carrying a wad of this mixture between gums and cheek. This practice seems closely related to the betel-nut chewing of other South Asiatic countries, which has actually been introduced into some of the cities of the Hadhramaut.

Like the Hadhramaut Bedawin, the Gara and their neighbors are much addicted to swearing oaths on the tombs of powerful men of old. The huge piles of rock which surmount the remains of these titans probably date, in most instances, to pre-Islamic times. There are seven shrines which people from Dhofar to the Hadhramaut recognize as especially powerful, but that of Saleh ibn Hud, the great prophet of the Hadhramaut Bedawin, is the strongest of all, and men go from the Gara country to swear over it.

The purpose of these oaths is part of the indigenous legal system. If a man is accused of murder, theft, or some other serious crime and denies it, the accuser or the judge, or both, may demand an oath of innocence on a certain shrine; the accused may, meanwhile, demand that they go rather to a weaker one. Since the tombs are graded by degree of strength, considerable haggling may take place before the exact spot of pilgrimage is determined. Often the accused will, at the last moment, confess rather than take an oath falsely; for the saint or prophet buried under the stones is powerful and will punish the false-swearer by some apparent accident shortly after the oath is taken. A poisonous snake may bite him, or a rock fall on him. Oath taking, even for an innocent man, is charged with power and importance, and is a nerve-racking ordeal in any case.

Actual ordeals, however, may be required in addition to the oaths. These ordeals must be inflicted by a specially qualified blacksmith, but there are few who actually practice. Sometimes the Gara and Mahra go as far as the Hadhramaut to undergo these ordeals, as well as to take oaths. The commonest ordeal is that of fire, conducted as follows. The blacksmith heats a dagger blade red hot, holds the accused's tongue in his left hand, and the knife in his right; he kisses the blade quickly first, with his own lips, then he slaps the blade on the accused's tongue quickly with one side of the dagger, then with the other.

If the accused is innocent, he should be able to spit at once, but the accusers usually allow two hours or more to pass before they ask the blacksmith to inspect the ordeal-taker's tongue. If there are signs of undue burning, swelling, or glandular swelling in the neck, the blacksmith pronounces the patient guilty; if not, innocent. A man pronounced guilty is thereafter liable to vengeance, and, if the charge is murder, the accuser tries to kill the convicted one as soon as possible. For that reason the accused, one may presume, seldom goes to his ordeal alone.

The desert men, including the Al Kathir and other Arabic speakers who graze their cattle on the southern wadys of the Empty Quarter, are pious, and say their daily prayers. They also wear more clothing than the Gara. One reason for this difference is that they have some contact with the Murra and Rashidis who wander through the northern portion of the Empty Quarter, and who are Nejdis. But the Gara, as far as either the Bents or Bertram Thomas could determine, are purely and overtly heathen. Jinns or spirits form their principal object of worship. These jinns live beside rocks which lie along the banks of streams, and under trees; the Gara sing supplications to the jinns as they pass, so that they may not be molested. Other jinns live in the mountain lakes, and the Gara fear to wet their feet in this water. There are, furthermore, domestic jinns who share their caves with the Gara, and who must be propitiated with offerings.

These jinns are manifestly local spirits, bound to the rocks, water, and trees where they live. They are animistic beings, of the same kind that pervades the Yemen countryside. In Islam, these jinns have been formalized, divided into the classes of earth, sea, air, and sky jinns, and given specific functions and attributes according to their classifications, and have been incorporated into the formal Moslem corpus of belief. According to the orderly Moslem system, God created angels and placed them in the sky, and jinns whom he established on the earth. The jinns revolted and were dispersed by a company of angels under Iblis, who drove them to the sea and the islands in it. After a while Iblis and his followers in turn rebelled, and God made them shaitans, in charge of hell and hellfire. Then God created men to inhabit the earth, and thus the stratification of God, angels, men, jinns, and shaitans came into being.

Like the Australian, the Arab feels it necessary to fit every person and every spiritual entity into an orderly genealogical, classificatory system, in order to know what behavior is expected between each pair of individuals. Thus, the jinns, the ancient lords of the South Arabian landscape, have been squeezed and jockeyed to fit their proper shelves. But among the Gara this classification has not yet occurred, and the jinns are still limited to their local rôles. In these rôles they are propitiated not only by casual passers-by, but in some instances by worshippers who travel especially to their holy spots for the purpose of sacrifice.

Thus, in November the Gara hold an annual festival on the shore of one of their tiny lakes. The people assemble by clans and families, and dance while a magician, sitting on a rock in their midst, propitiates the jinn of the lake. Also the Bait Ziyat clan, one of the small subject peoples of the Gara, presumably a subdivision of the Shahara, goes annually to the sacred spring of Rizat, the jinn of which is considered their ancestor. Here they cast votive food into the spring. Another form of sacrifice, found among agriculturists, is to lead a cow through the fields of standing grain, just before the harvest, and there to slaughter her, letting the blood flow into an irrigation ditch, and then to throw pieces of her flesh about in the grain.

Thus, we have here an agricultural ceremony, of a patent rain-making and fertility implication. The other examples given likewise have reference to water, and the Rizat example shows that the jinn may indeed be ancestral, as are the heroes, buried under the oath-receiving tombs. So the cult of the earth spirits may in part be an ancestral one.

Other rites of a similar nature, recorded in the Hadhramaut, include hunting ceremonies. Ingrams, near Terim, saw a dance performed in honor of a successful ibex hunt. The horns of one head were decorated with bells, and the huntsmen headed a long procession of singing, shouting, and dancing men. This was performed not by Bedawin but by tribal town Arabs, much to the disgust of the Sayyids, who did not hesitate to voice their disapproval.

The evil eye, in southern Arabia as in the Mediterranean, is blamed for illnesses among cattle and loss of milk. The Gara exorcise it by a rite dependent upon the magical efficacy of burning frankincense in conjunction with a recited formula. Hence frankincense is not merely a local product which may be exported with profit; here as in the Yemen it has its ritual use, and one which may be far older than the export trade. It is a gum to be burned as incense, like the copal of the Aztecs and Maya, and like cedar wood in East Africa and in Homeric Greece.

The foregoing accounts of Gara ceremonies and those of other South Arabian peoples require the existence of a class of individuals who may only be called shamans in the truly ethnological sense. The jinn-expellers of the Yemen are in effect shamans, and the ancient Semitic prophets, not excluding Jesus and Mohammed, had much of the shaman's technique about their practices. Hence it is not to be considered remarkable that such practitioners, in their primitive form, should appear among the Gara. Old men and old women are often suspected of black magic, and are accused of causing suspicious deaths; oaths and ordeals are often required of them to remove suspicion.

The practice of medicine is almost wholly shamanistic, although it is hard to detect the specific practitioner, since much of the curing seems to be done by group treatment. When a man has pains or some other affliction in a specific part of the body, a group of his friends lay him down and crouch about him, with one as the leader. They chant formulae, the leader singing first and the others responding. Then they bow over the body, one by one, sucking the affected part, and drawing the flesh up into their mouths by the suction. They also spit on the body. This description, probably incomplete, refers without possible doubt to the ancient practice of sucking out the material object which has entered the patient's body by magical intrusion, and has been causing the trouble. The practice is world wide among the most primitive peoples, and among some others who are more advanced; it is characteristic of Fuegians, Australians, and Bushmen.

At this point it may be useful to recapitulate some of the cultural features which connect the Gara and the rest of the so-called Veddoid group with India and points south and east. There are definite connections with the Vedda themselves and the wild tribes of southern India, and with the cultural level found in its extreme form among the Australians. They include the basic division of the people into exogamous clans, with clan ownership of hunting or grazing territories; the division of the clans into noble and servile, as among the Vedda; the custom of escorting strangers through clan territories, and passing them on to the next group at the border; the belief in local spirits, some of which are ancestral, and a primitive level of shamanism. When one adds to this the habit of living in caves, an addiction to frequent nocturnal dancing, the use of body paint, a mass puberty initiation of boys, and such material properties as costume, hair-dressing, the wooden shield and pointed throwing stick, the total roster is impressive. No one, however opposed to the historical method or to theories of diffusion, could deny that these resemblances, in combination with a favorable geographical position and a similarity of physical type, must indicate that these people belong to an early southern Asiatic cultural and racial regime.

On the other hand, there are further factors which link these people with a more advanced order which has been most notably preserved in southern India; these include the whole cattle complex which they have in common, the use of turmeric, and perhaps the worship of great tombs of jinns and ancestors; it is hard and foolish to try to separate these two levels, since both are inextricably blended in India as well as in Arabia.

Before concluding our remarks about the surviving speakers of pre-Arabic Semitic languages, we must not omit mention of Socotra, that island, dangerous to mariners, which lies immediately off the tip of the Horn of Africa. The inhabitants of Socotra speak a language closely related to Mahri, and are ruled by a relative of the Mahri Sultan. The inhabitants of the coast live in villages, and are to a certain degree Moslem. A number of Arabs have settled in these villages as merchants and traders.

The Bedawin of the interior are, like their linguistic relatives on the mainland, largely pastoral, although Socotra is by no means as barren as the Mahra country. Cows, of the humpless variety, and goats are their principal animals, while the coastal people breed camels. Agriculture is primitive, and the ground is prepared not with the plough but with the digging stick. The island produces four varieties of frankincense and two of myrrh, as well as quantities of the gum of the dragon's blood tree, needed for the manufacture of fine lacquer. Botanically, the island has been found to contain a large number of native plants of high economic utility.

Socotra, although today completely isolated, and so little known that it is futile to attempt a summary of data concerning the culture of its inhabitants, was not always, in the past, so neglected as it is at present. The author of the Periplus states that it contained, in his day, a mixed Greek-speaking population drawn together for trading purposes. In the fifth century A.D. Socotra sent a Christian missionary to India, and Marco Polo designated the Socotrans as Christian. The Portuguese, in turn, stopped at Socotra and found the natives still Christian, and this Christianity seems to have lasted into the seventeenth century. For this reason one must, in studying Socotra, bear in mind the possibility of extensive outside influence in the past, which may, while in no way diminishing the interest of this almost unknown island, make its study a special problem as much as a part of the study of southern Arabian culture as a whole.

CONCLUSIONS

In the foregoing sections it has become increasingly clear that the problem of the peopling of southern Arabia and of the development of its characteristic cultures, both in antiquity and in recent times, will not really be difficult to solve, once we have obtained a modicum of reliable information. Even with the few facts at our disposal, we may make a number of deductions which it is not unsafe to hold as suggestions pending the collection of more ample data.

The racial documents, collected in the field by the author and nearly ready for publication in technical form, show that the population of the Yemen highlands and plateau is almost entirely Mediterranean in race. The Hadhramaut, on the other hand, including the mountain territory running south of the Imam's border to the Bab el Mandeb, and extending eastward well beyond Dhofar, consists of a racial medley in which the most important and most readily isolated type is a moderate statured, ringlet-haired, small-headed hybrid variety, produced by a mixture between Mediterraneans and aboriginal peoples who were not white. Of the non-white elements, the most readily discernible is a Veddoid or Australoid, which appears in rare individuals in an almost phenotypically pure form. The only other discernible non-white element is Negrito. As we have stated earlier, the absolute confirmation of the existence of this Negrito element is not possible with present documents. The inhabitants of the Musandam Peninsula must first be studied. Besides the Mediterraneans and the non-white named above, there is still another racial element in southern Arabia, that of the brachycephalic sailors who have colonized the Yemen coast, and who have also contributed to the population of coastal settlements in the Hadhramaut. These people are short, lateral in body build, small headed, and frequently Armenoid in facial features. Where they came from, and when, are mysteries. Finally, one must mention the African slave population, which is numerous on the Yemen coast and in the Hadhramaut Valley, but completely lacking in the Yemen Highlands, and relatively rare in other parts of the Hadhramaut territory. This slave population is clearly designated socially, and it is unlikely that African slave mixture is responsible for all of the frizzly-haired element in the non-slave population of southern Arabia.

Culturally, southern Arabia represents local developments based upon three or more different phenomena:

(1) At a remote period, an old Australo-Veddoid food-gathering culture extended westward along the whole southern rim of the peninsula, including southern Yemen.

(2) In the Yemen itself, and perhaps the Hadhramaut as well, an early efflorescence of agriculture, with perhaps the local domestication of some food plants, provided the Neolithic basis upon which the high civilizations of proto-historic and historic times were later imposed.

(3) The geographical position of southern Arabia, half-way between the Mediterranean and Indian worlds, combined with the presence of the frankincense tree in the Hadhramaut, Dhofar, and Socotra, stimulated the development of a high literate civilization in close touch with Egypt, Mesopotamia, India, and later, with Greece and Rome. This literate civilization, however, seems to have originated elsewhere. At the moment eastern Arabia, in the region now being explored by the Standard Oil Company of California, is the most likely prospect.

(4) Probably before the development of this literate civilization, but later than the spread of the Australo-Veddoid culture, a dairying cattle culture, bearing with it an elaborate set of social and religious regulations, passed through southern Arabia on its way from India to East Africa, where it developed ultimately into the widespread East African cattle culture.

(5) The Yemeni agriculturalists were also, to a certain extent, affected by the passage of this

cattle culture, which remained localized in the only spot in southern Arabia eminently suited for it—the Gara Mountains, and perhaps Socotra.

(6) The modern Bedawin of northern Arabia, with their pastoral nomadism dependent on the camel, and with their use of the horse as a symbol of prestige, derived many of their basic ideas of social structure and social values from the south, by means of a transference of symbolism from one animal to another, in accordance with environmental restrictions.

(7) At some time in the not too remote past, brachycephalic sailors of unknown origin established themselves in villages along the two South Arabian coasts, especially along that of the Yemen. Their descendants and the other coastal people of the Yemen present the only complete lacuna in our knowledge of southern Arabia.

Whether or not the seven points outlined above are correct, in each instance and in every detail, we have learned enough to realize that southern Arabia is an extremely important area, and that its people, living and dead, deserve the careful attention of expert investigators trained in all branches of anthropology in the widest sense. This paper is, let it be repeated, no more than an attempt to place our present knowledge of the area into a single compass and upon a reasonable foundation. The study of southern Arabia is in the position of Egyptology one hundred years ago, of Mesopotamia fifty, and of the Indus Valley ten. Owing to the maximum survival of ancient cultures in the modern South Arabian states, this study should not present insuperable difficulties to the investigators of the future.

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